CDP-XE220/XE320

SERVICE MANUAL

Ver 1.1 2001. 05

AEP Model
UK Model



Photo: CDP-XE320

Model Name Using Similar Mechanism	CDP-XE210/XE310
CD Mechanism Type	CDM14FL-5BD29C
Base Unit Type	BU-5BD29C
Optical Pick-up Type	KSS-213BA/F-NP

SPECIFICATIONS

Compact disc player

Laser Semiconductor laser (λ = 780 nm)
Emission duration: continuous

Laser output Max 44.6 µW*
* This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up block with 7 mm aperture.

Frequency response 2 Hz to 20 kHz ± 0.5 dB

Signal-to-noise ratio More than 100 dB

Dynamic range More than 92 dB

Harmonic distortion Less than 0.005%

Channel separation More than 95 dB

Outputs

	Jack type	Maximum output level	Load impedance
LINE OUT	Phono jacks	2 V (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output connector	–18 dBm	Wave length: 660 nm

General

Power requirements 220 V – 230 V AC, 50/60 Hz

Power consumption 10 W

Dimensions (approx.) (w/h/d) 430 × 95 × 290 mm (17 × 3 3/4 × 11 1/2 in.) incl. projecting parts

Mass (approx.) 3.0 kg (6 lbs 10 oz)

Supplied accessories

Audio cord (2 phono plugs – 2 phono plugs) (1)
Remote commander (remote) (CDP-XE320 only) (1)
Sony SUM-3 (NS) batteries (CDP-XE320 only) (2)

Design and specifications are subject to change without notice.

COMPACT DISC PLAYER

9-922-805-12
2001E0200-1

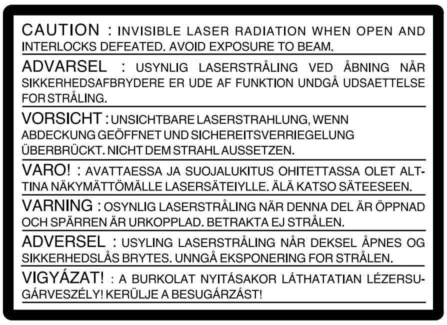
Sony Corporation
Home Audio Company
Shinagawa Tec Service Manual Production Group

SONY®

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.



The following caution label is located inside of the unit.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

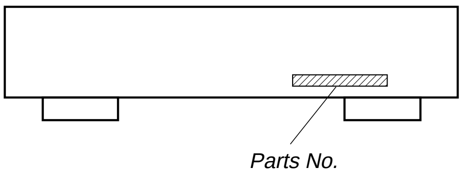
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

MODEL IDENTIFICATION
— BACK PANEL —



PARTS No.	MODEL
4-996-565-0□	XE320 : AEP
4-996-565-1□	XE320 : UK
4-996-565-2□	XE220 : AEP
4-996-565-3□	XE220 : UK

SAFETY-RELATED COMPONENT WARNING !!

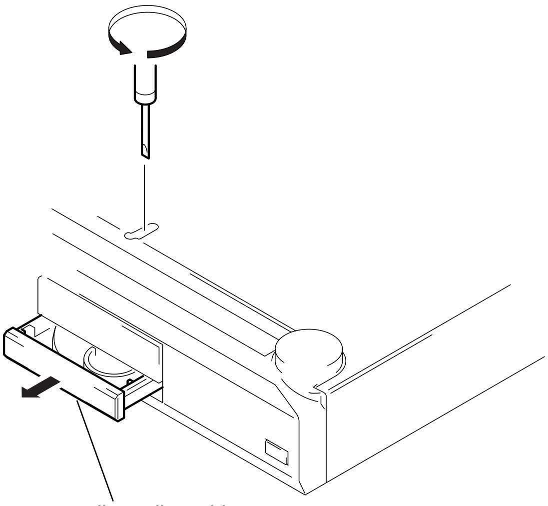
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
SERVICING NOTE

HOW TO OPEN THE DISC TRAY WHEN POWER SWITCH TURNS OFF

Insert a tapering driver into the aperture of the unit bottom, and turn in the direction of arrow.

* *To close the disc table, turn the driver in the reverse direction.*



Pull out disc table.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

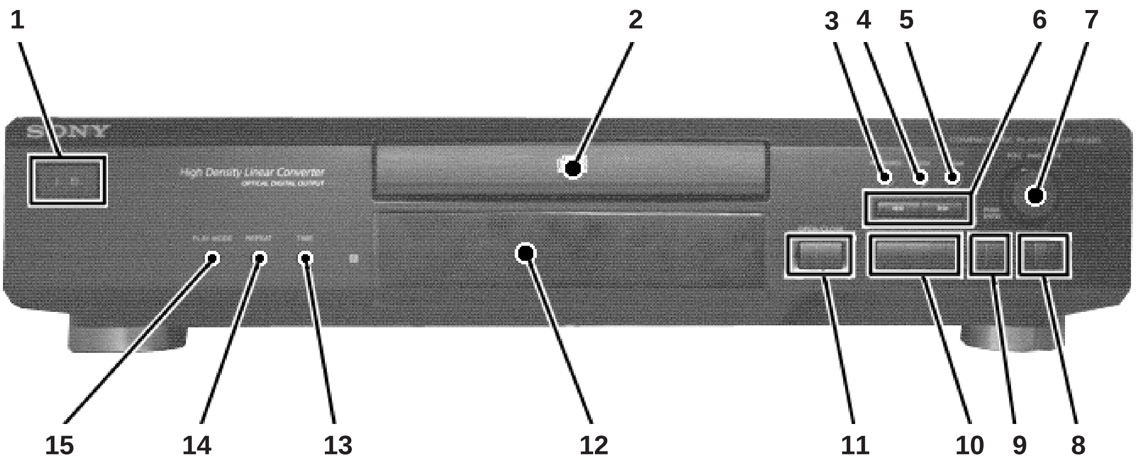
The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in “CD section adjustment” and check that the S curve waveform is output two times.

SECTION 2
GENERAL

Front Panel



LOCATION OF PARTS AND CONTROLS

1 I/⏻ switch
2 DISC tray
3 PEAK SEARCH button
4 CHECK button
5 CLEAR button
6 ◀◀,▶▶ button
7 I◁◁, AMS * ▷▷I knob
(PUSH ENTER button)
8 ■ (stop) button
9 ❚❚ (pause) button
10 ▷ (play) button
11 ⏏ OPEN CLOSE button
12 Display window
13 TIME button
14 REPEAT button
15 PLAY MODE button

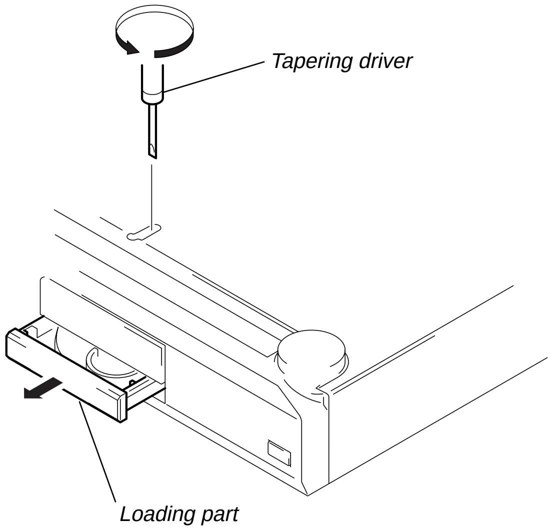
* AMS is the abbreviation for Automatic Music Sensor.

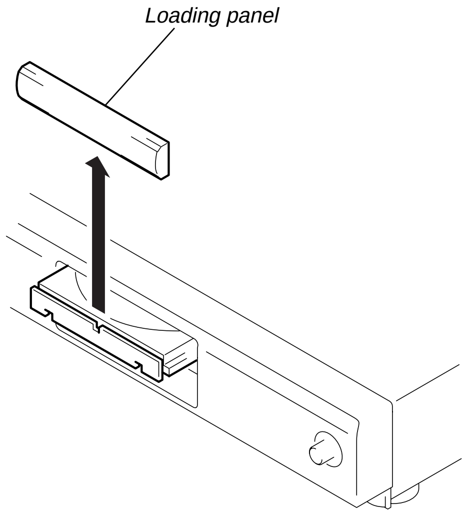
SECTION 3
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

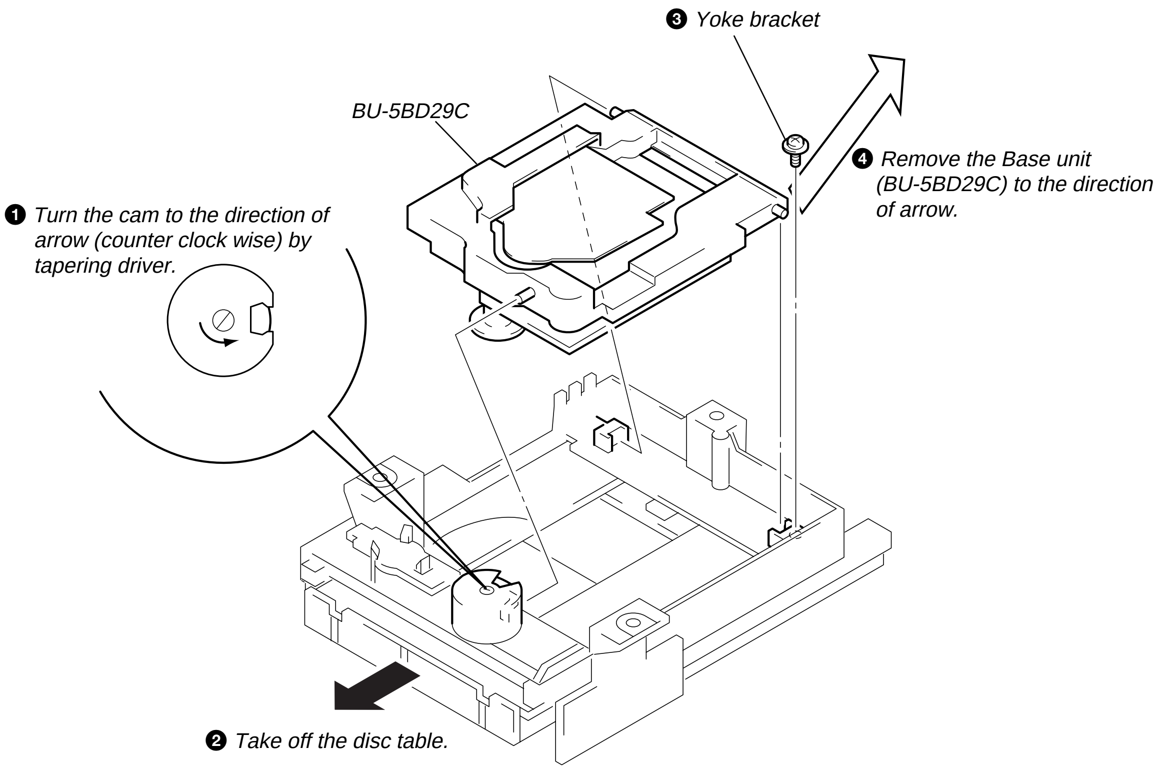
3-1. FRONT PANEL

- In order to remove the front panel block when the power supply does not turn on, rotate the cam with tapering driver as the figure shows, and the loading part will be moved.
  Then pull out the loading part by your hand to remove the loading panel as the figure shows. After that take out the front panel block.





3-2. BASE UNIT (BU-5BD29C)



SECTION 4
TEST MODE

4-1. AF MODE

The following checks can be performed in the AF mode, which is set by connecting the TP2 (JW40 : AFADJ) terminal on MAIN board to the Ground and turning on the power.

• **FL tube check**

After all segments light up, when the ▷ button is pressed continuously, the following will be displayed. (Partial lighting 1)



(Partial lighting 1)

When the ■ button is pressed continuously, the following will be displayed. (partial lighting 2)

	2		4	
6		8		10
	12		14	
16		18		20

(Partial lighting 2)

When the OPEN/CLOSE ⏏ button is pressed continuously, all will light up again.

• **Key check**

All buttons have corresponding button numbers. When a button is pressed, the counter will count up and display the button's number. However, the counter will only count to "13". It will not count for buttons already pressed once, but will display the button's number.



Button	Button No. Displayed	Button	Button No. Displayed
II	02	PEAK SERCH	10
ENTER (AMS)	04	CHECK	11
◀◀	05	CLEAR	12
▶▶	06	OPEN/ CLOSE ⏏	All lit
TIME	07		
REPEAT	08	PLAY ▷	Partial lighting 1
PLAY MODE	09	STOP ■	Partial lighting 2

When the AMS knob is rotated to the right, the music calendar changes from 1 → – – → 20 → 1.
When rotated to the left, it changes from 20 → 1 → 20 – –

• **Remote commander check**

When the ▷ button of the remote commander is pressed, the "▷" lights up. All go off when the other buttons are pressed.

4-2. ADJ MODE

The following operations are performed in the ADJ mode, which is set by connecting the TP3 (JW41 : ADJ) terminal to the Ground and turning on the power.

FUNCTIONS OF NUMBER BUTTONS
(With the general remote commander)

Button	Function
1	Focus bias adjustment plus (Not used in servicing)
2	EF-BALANCE adjustment plus (Not used in servicing)
3	Tracking servo off
4	Tracking gain adjusting plus (Not used in servicing)
5	Laser power control off (Not used in servicing)
6	Focus bias adjustment minus (Not used in servicing)
7	EF-BALANCE adjustment minus (Not used in servicing)
8	Tracking servo on
9	Tracking gain adjustment minus ((Not used in servicing)
10	Laser power control on (Not used in servicing)

4-3. AGING MODE

This unit is equipped with an aging mode to check operations of the mechanism deck.
• When faults occur:
Aging stops, and the state when aging stopped is displayed on the fluorescent display tube.

• When no fault has occurred:
Aging is continued repeatedly.

Aging method 1
(When using the aging mode remote controller (J-2501-123-A)):

1. Press the [I/⏻] button and turn ON the power.
2. Set the disc on the tray.
3. Press the [AGING START] button of the aging remote controller.
4. Aging starts and the message shown in Fig. 1 is displayed on the fluorescent display tube.
5. To end, press the [I/⏻] button.

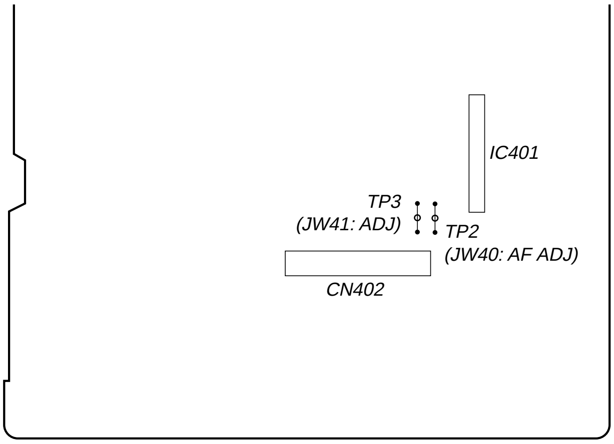
Aging method 2 (When no aging mode remote controller):

1. Press the [I/⏻] button and turn ON the power.
2. Set the disc on the tray.
3. Press the [II] button, [CHECK] button, and [PLAY MODE] button together in this order.
4. Aging starts and the message shown in Fig. 1 is displayed on the fluorescent display tube.
5. To end, press the [I/⏻] button.

Fig. 1 Message in Aging Mode

Code No.	State	Display when normal	Display when abnormal
0	Load in	A0	E0
1	Access to TOC	A1	E1
2	Access to last track	A2	E2
3	Playback of last track (3 seconds)	Counter display	E3
4	Access to first track	A4	E4
5	Playback of first track (3 seconds)	Counter display	E5
6	Load out	A6	E6

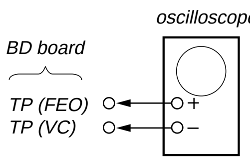
[MAIN BOARD] — Component Side —



SECTION 5
ELECTRICAL BLOCK CHECKING

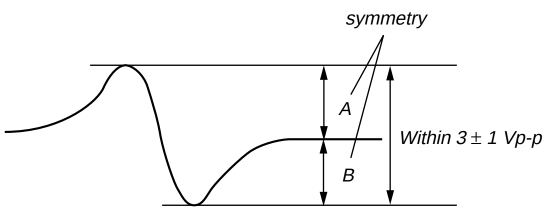
Note:
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check



Procedure :
1. Connect oscilloscope to test point TP (FEO) on BD board.
2. Connect between test point TP (FOK) and ground by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turn Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3±1 Vp-p.

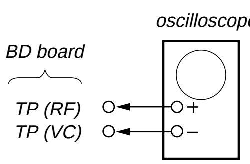
S-curve waveform



6. After check, remove the lead wire connected in step 2.

Note :
- Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
- Take sweep time as long as possible and light up the brightness to obtain best waveform.

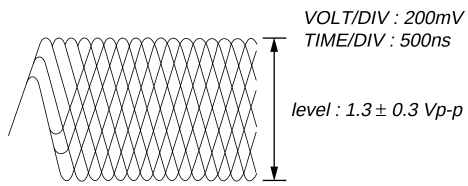
RF Level Check



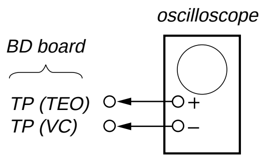
Procedure :
1. Connect oscilloscope to test point TP (RF) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note:
A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

RF signal waveform

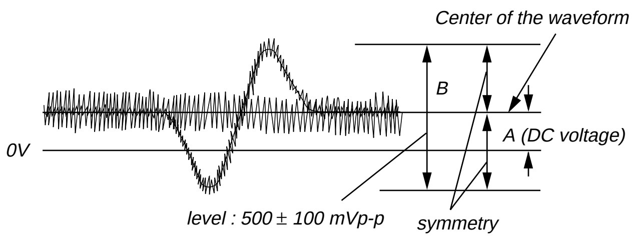


E-F Balance (1 Track Jump) Check (Without remote commander)

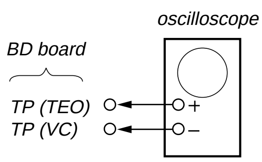


Procedure :
1. Connect oscilloscpe to test point TP (TEO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in to play the number five track.
4. Press the "❚❚ (Pause)" button. (Becomes the 1 track jump mode)
5. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 7%

1 track jump waveform



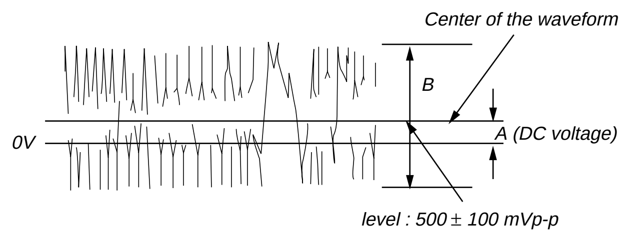
E-F Balance Check (With remote commander)



Procedure :
1. Connect the test point TP3 (ADJ) on MAIN board to the ground with a lead wire on main board.
2. Connect oscilloscpe to test point TP (TEO) on BD board.
3. Turn the Power switch on to set the ADJ mode.
4. Put disc (YEDS-18) in to play the number five track.
5. Press the "3" button. (The tracking servo is turned OFF.)

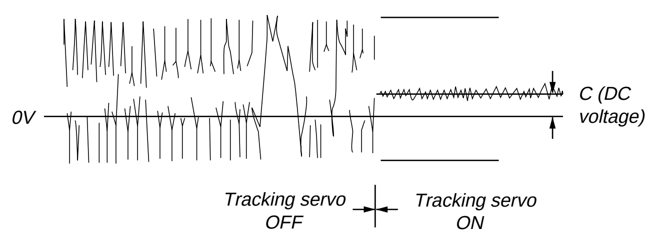
6. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
Confirm the following :
A/B x 100 = less than ± 7%

Traverse waveform



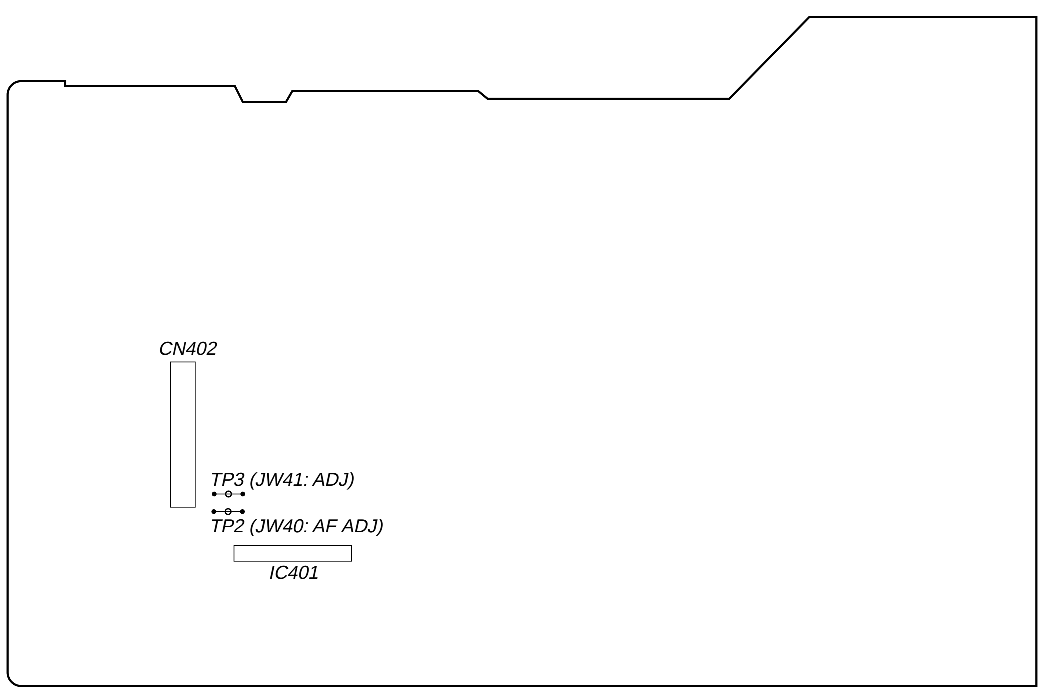
7. Press the “8” button. (The tracking servo is turned ON.) Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 6.

Traverse waveform



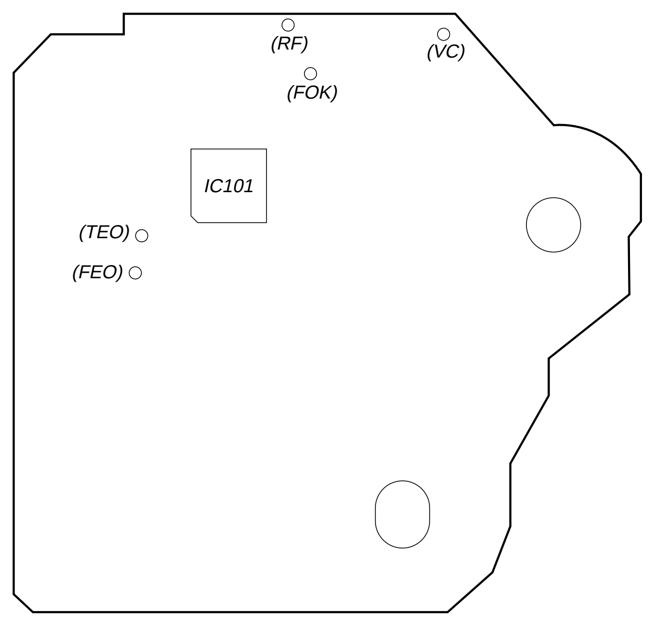
8. Disconnect the lead wire of TP3 (ADJ) connected in step 1.

[MAIN BOARD] — Component Side —



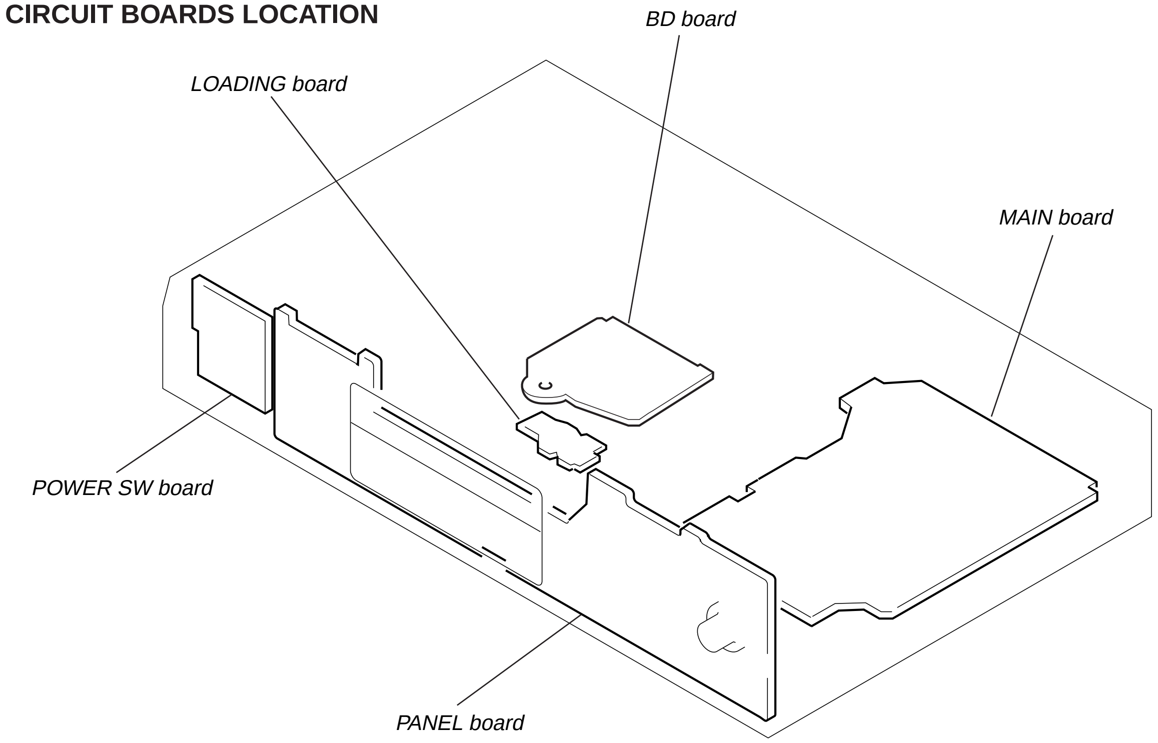
Adjustment Location :

[BD BOARD] — Side A —



SECTION 6
DIAGRAMS

6-1. CIRCUIT BOARDS LOCATION



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

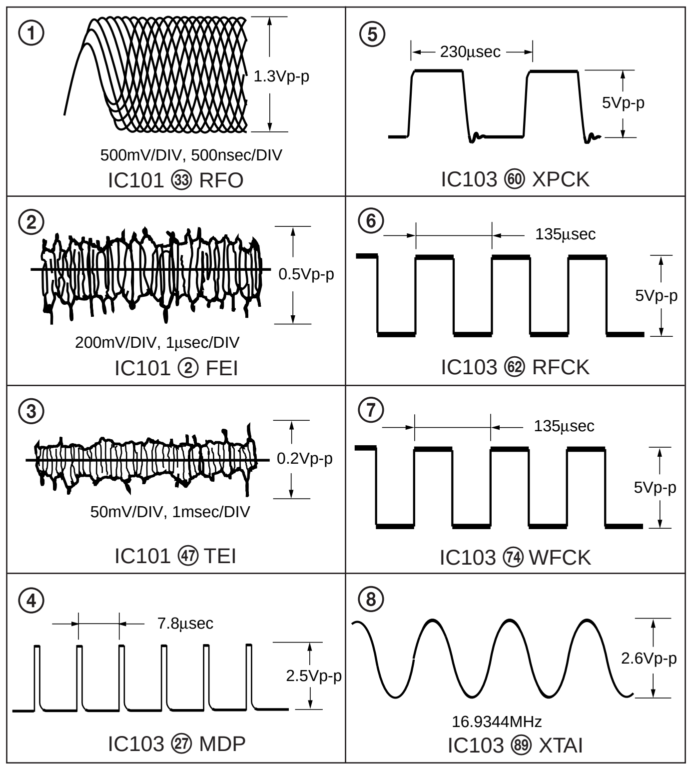
For schematic diagrams.
Note:
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

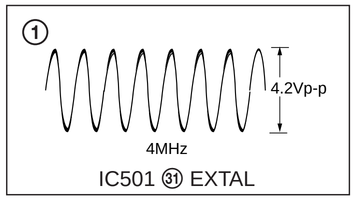
- B+ : B+ Line.
- B– : B– Line.
- ▭ : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : STOP
  ( ) : PLAY
  ∗ : can not to be measured
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD
  ⇨ : digital out

For printed wiring boards.
Note:
- o—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ○ : Through hole.
- ░ : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

WAVEFORMS
– CD SECTION –



– PANEL SECTION –

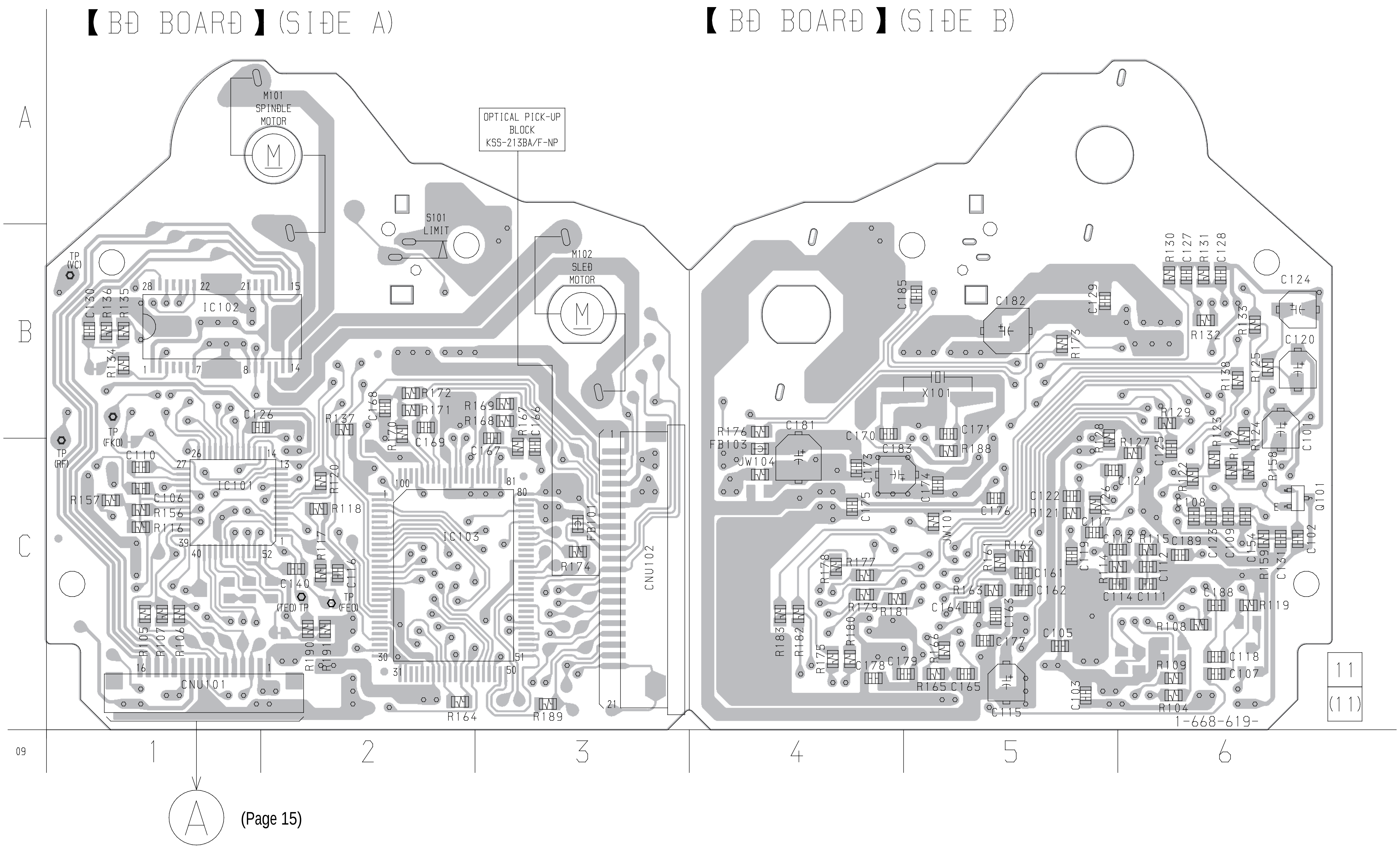


6-2. PRINTED WIRING BOARD – CD SECTION –

• See page 10 for Circuit Boards Location.

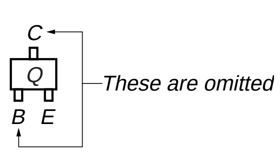
• **Semiconductor Location**

Ref. No.	Location
IC101	C-1
IC102	B-1
IC103	C-2
Q101	C-6



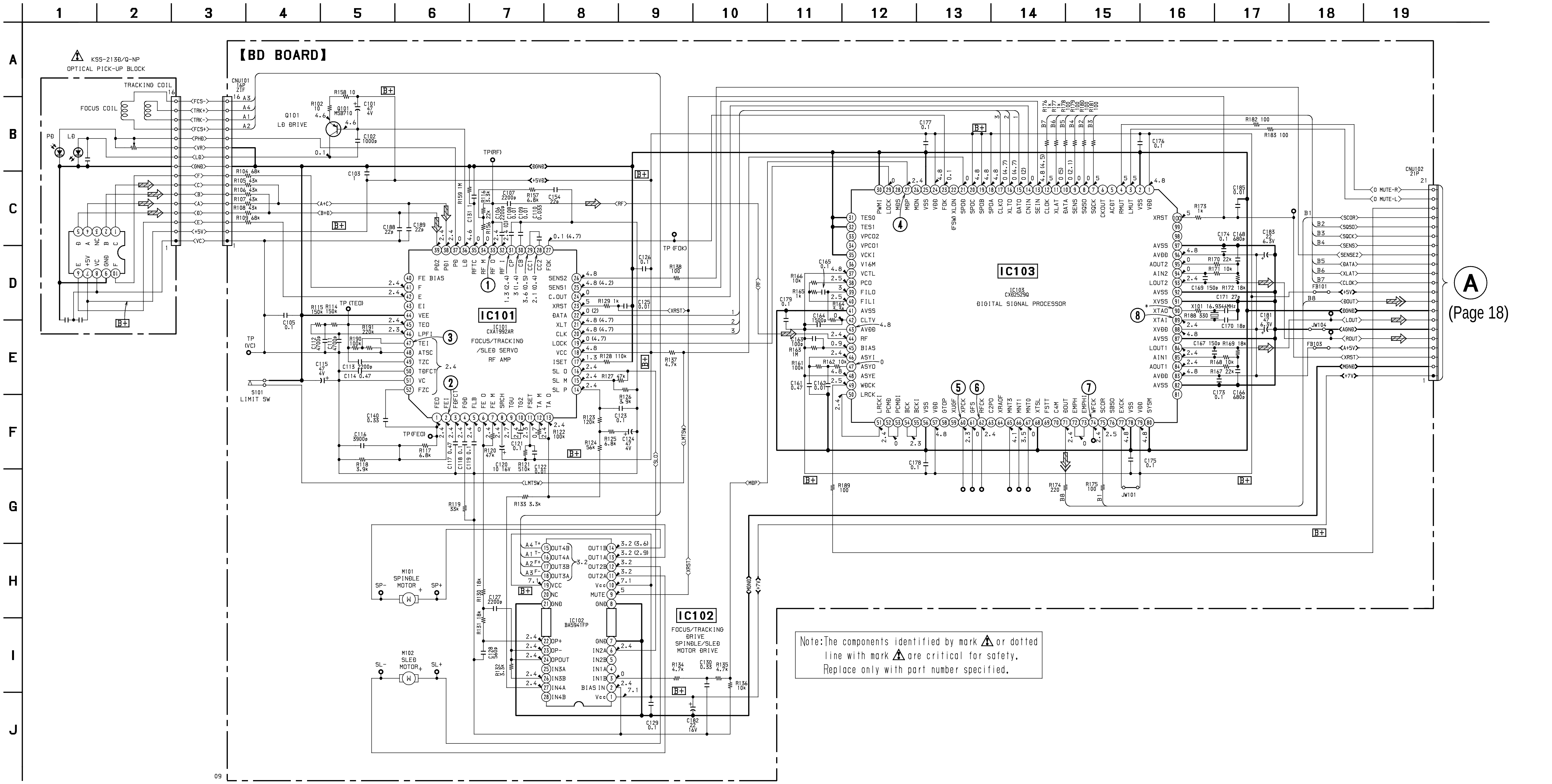
(Page 15)

• **Indication of transistor**



6-3. SCHEMATIC DIAGRAM – CD SECTION –

• See page 10 for Waveforms.
• See page 23 for IC Pin Functions.
• See page 29 for IC Block Diagrams.

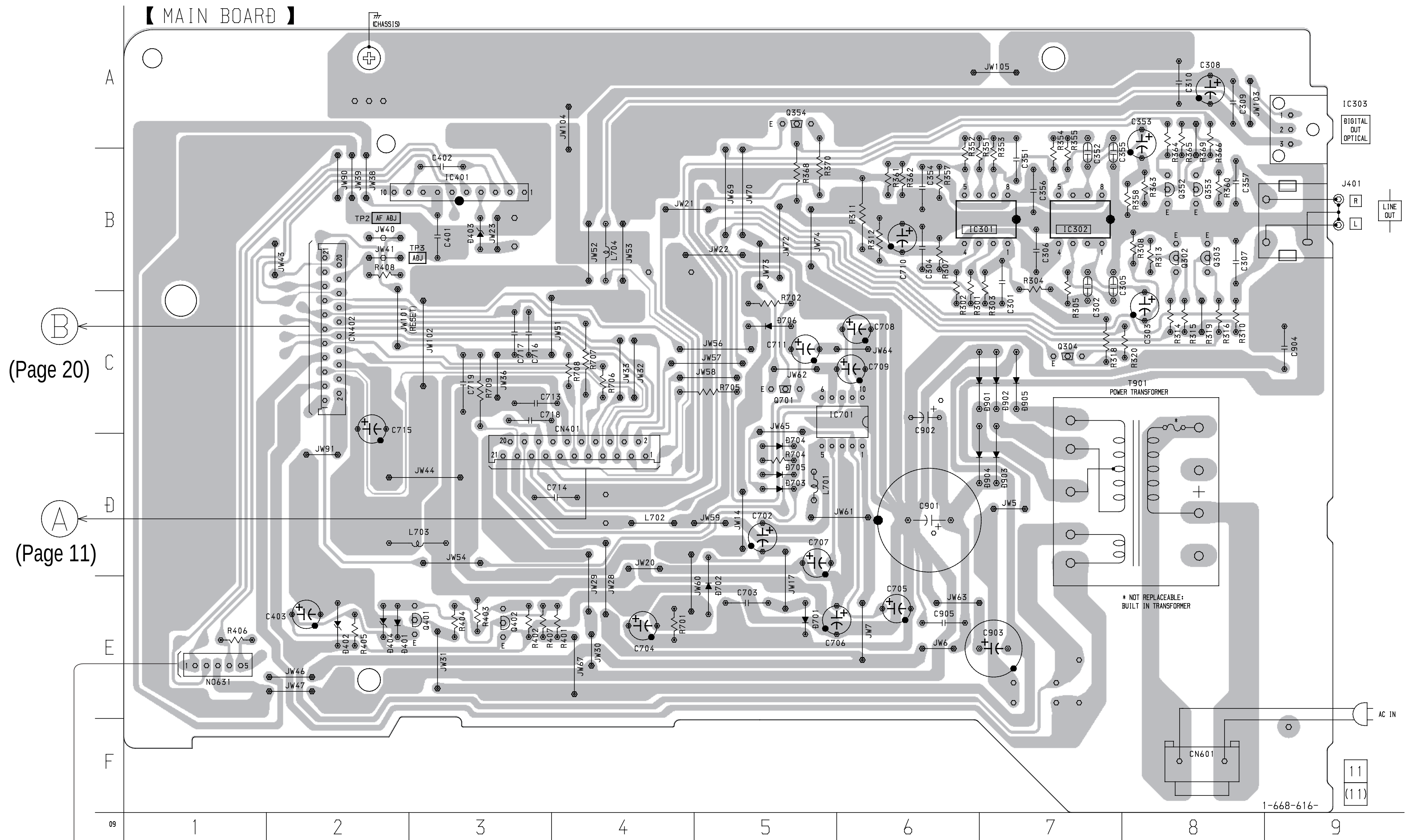


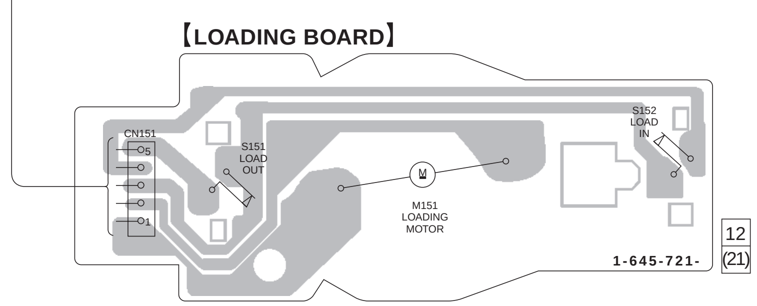
6-4. PRINTED WIRING BOARD – MAIN SECTION –

• See page 10 for Circuit Boards Location.

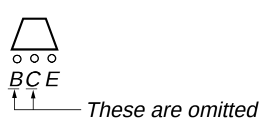
• Semiconductor Location

Ref. No.	Location
D401	E-2
D402	E-2
D403	B-3
D404	E-2
D701	E-5
D702	E-5
D703	D-5
D704	D-5
D705	D-5
D706	C-5
D901	C-7
D902	C-7
D903	D-7
D904	D-7
D905	C-7
IC301	B-7
IC302	B-7
IC303	A-9
IC401	B-3
IC701	C-6
Q302	B-8
Q303	B-8
Q304	C-7
Q352	B-8
Q353	B-8
Q354	A-5
Q401	E-3
Q402	E-3
Q701	C-5



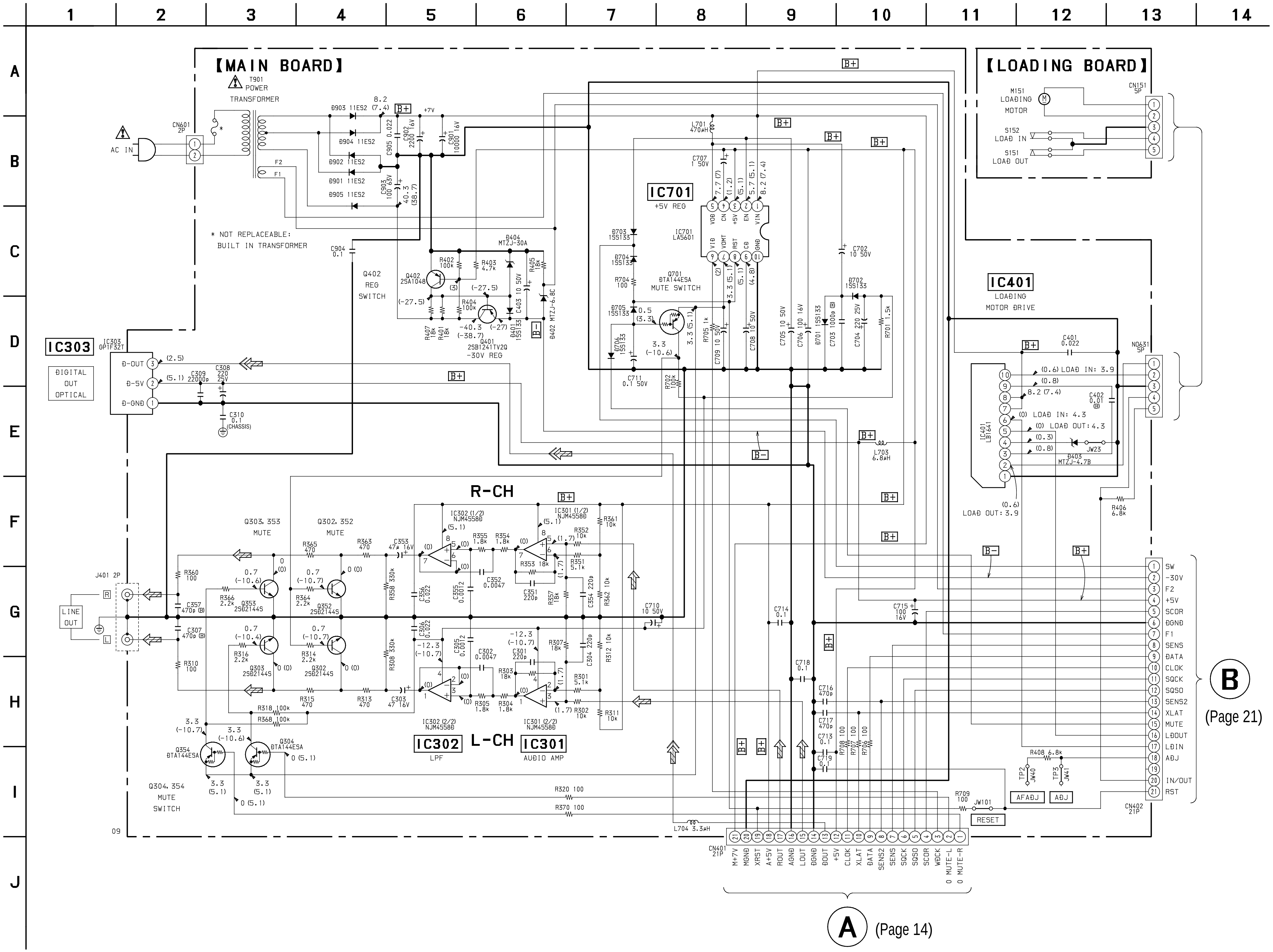


• Indication of transistor



6-5. SCHEMATIC DIAGRAM – MAIN SECTION –

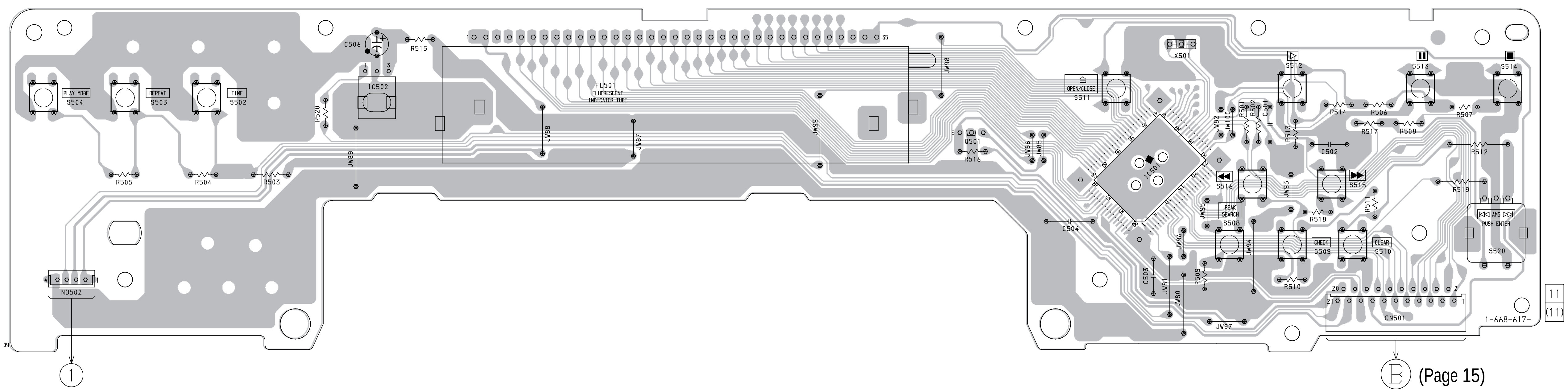
• See page 31 for IC Block Diagrams.



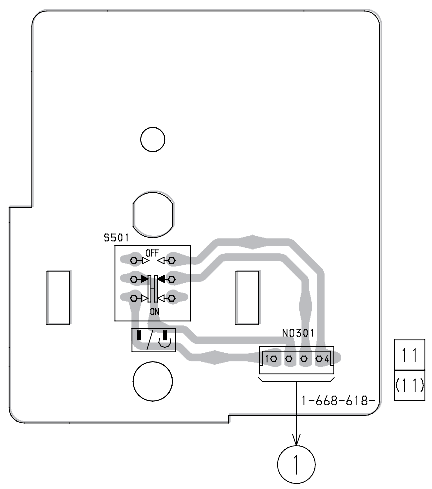
6-6. PRINTED WIRING BOARD – PANEL SECTION –

• See page 10 for Circuit Boards Location.

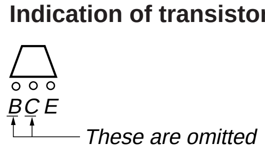
【PANEL BOARD】



【POWER SW BOARD】

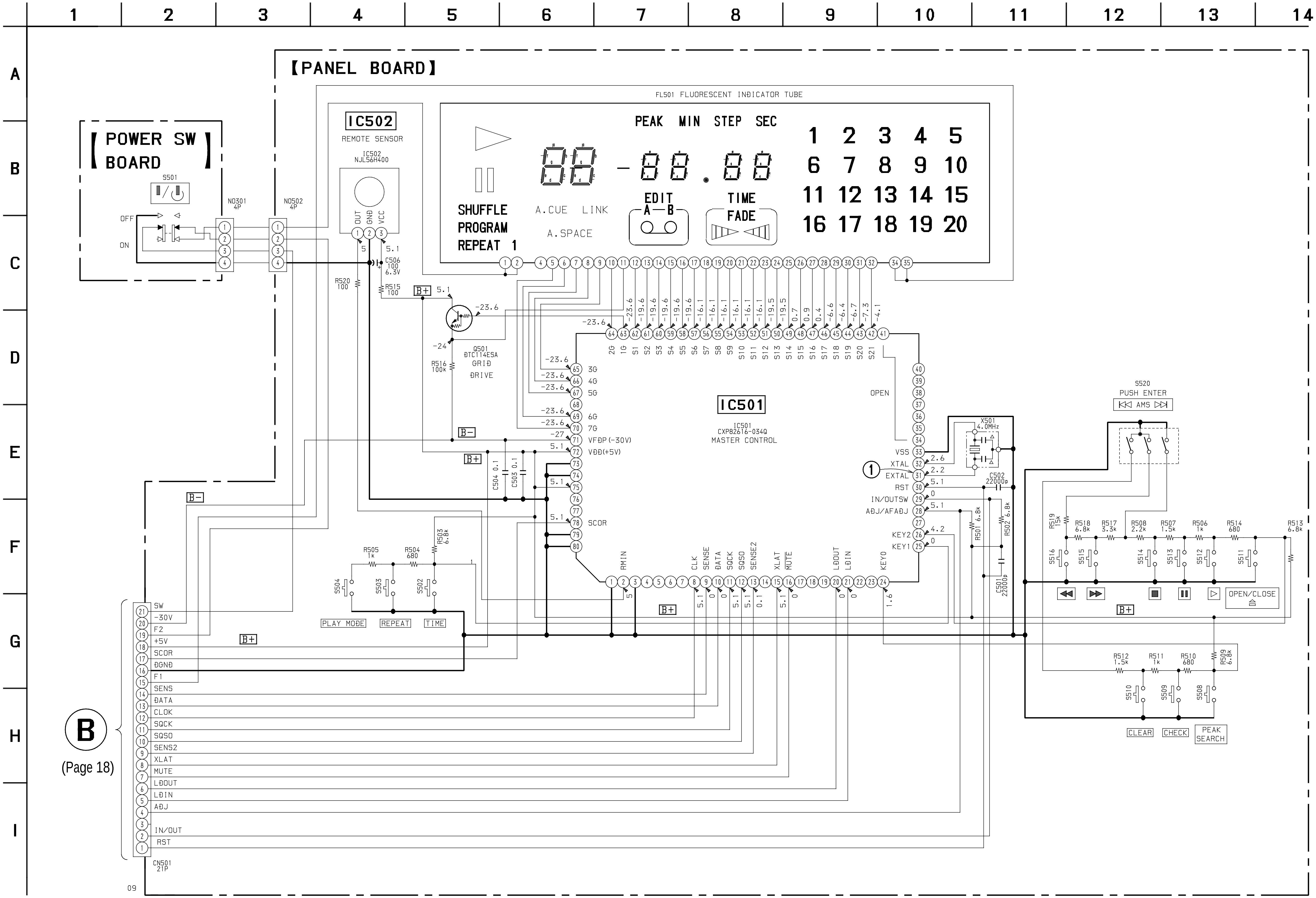


• **Indication of transistor**



6-7. SCHEMATIC DIAGRAM – PANEL SECTION –

- See page 10 for Waveforms.
- See page 28 for IC Pin Functions.



6-8. IC PIN FUNCTIONS

- **IC101 FOCUS/TRACKING/SLED SERVO RF AMP (CXA1992AR)**

Pin No.	Pin Name	I/O	Function
1	FEO	O	Focus error amplifier output Connected internally to the window comparator input for bias adjustment
2	FEI	I	Focus error input
3	FDFCT	I	Capacitor connection pin for defect time constant
4	FGD	I	Ground this pin through a capacitor for cutting the focus servo high-frequency gain
5	FLB	I	External time constant setting pin for boosting the focus servo low-frequency
6	FE O	O	Focus drive output
7	FE M	I	Focus amplifier inverted input
8	SRCH	I	External time constant setting pin for generating focus search waveform
9	TGU	I	External time constant setting pin for switching tracking high-frequency gain
10	TG2	I	External time constant setting pin for switching tracking high-frequency gain
11	FSET	I	Peak frequency setting pin for focus and tracking phase compensation amplifier
12	TA M	I	Tracking amplifier inverted input
13	TA O	O	Tracking drive output
14	SL P	I	Sled amplifier non-inverted input
15	SL M	I	Sled amplifier inverted input
16	SL O	O	Sled drive output
17	ISET	I	Connect an external capacitance to set the current which determines the Focus search, Track jump, and Sled kick heights
18	VCC	I	Positive power supply
19	LOCK	I	The sled overrun prevention circuit operates when this pin is Low (No pull-up resistance)
20	CLK	I	Serial data transfer clock input from CPU (No pull-up resistance)
21	XLT	I	Lach input from CPU (No pull-up resistance)
22	DATA	I	Serial data input from CPU (No pull-up resistance)
23	XRST	I	Reset input; resets at Low (No pull-up resistance)
24	C.OUT	O	Track number count signal output
25	SENS1	O	Outputs FZC, DFCT1, TZC, BALH, TGH, FOH, ATSC, and others according to the command from CPU
26	SENS2	O	Outputs DFCT2, MIRR, BALL, TGL, FOL,and others according to the command from CPU
27	FOK	O	Focus OK comparator output
28	CC2	I	Input for the defect bottom hold output with capacitance coupled
29	CC1	O	Defect bottom hold output Connected internally to the interruption comparator input
30	CB	I	Connection pin for defect bottom hold capacitor
31	CP	I	Connection pin for MIRR hold capacitor MIRR comparator non-inverted input
32	RF I	I	Input for the RF summing amplifier output with capacitance coupled
33	RF O	O	RF summing amplifier output Eye-pattern check point

- Abbreviation

FZC	: Focus zero-cross	ATSC	: Anti Shock
DFCT	: Defect	MIRR	: Mirror
TZC	: Tracking zero-cross	BALL	: E-F Balance (Low)
BALH	: E-F Balance (High)	TGL	: Tracking Gain (Low)
TGH	: Tracking Gain (High)	FOL	: Focus Bias (Low)
FOH	: Focus Bias (High)		

Pin No.	Pin Name	I/O	Function
34	RF M	I	RF summing amplifier inverted input The RF amplifier gain is determined by the resistance connected between this pin and RFO pin
35	RFTC	I	External time constant setting pin during RF level control
36	LD	O	APC amplifier output
37	PD	I	APC amplifier input
38	PD1	I	RF I-V amplifier inverted input
39	PD2	I	Connect these pins to the photo diode A+C and B+D pins
40	FE BIAS	I	Bias adjustment of focus error amplifier Leave this pin open for automatic adjustment
41	F	I	F I-V and E I-V amplifier inverted input
42	E	I	Connect these pins to photo diodes F and E
43	EI	–	I-V amplifier E gain adjustment (When not using automatic balance adjustment)
44	VEE	–	Negative power supply
45	TEO	O	Tracking error amplifier output E-F signal is output
46	LPFI	I	Comparator input for balance adjustment (Input from TEO through LPF)
47	TEI	I	Tracking error input
48	ATSC	I	Window comparator input for ATSC detection
49	TZC	I	Trackig zero-cross comparator input
50	TDFCT	I	Capacitor connection pin for defect time constant
51	VC	O	(VCC + VEE)/2 direct voltage output
52	FZC	I	Focus zero-cross comparator input

- Abbreviation
  APC : Auto Power Control

- **IC103 DIGITAL SIGNAL PROCESSOR (CXD2529Q)**

Pin No.	Pin Name	I/O	Function
1	VDD	–	+5V power supply
2	VSS	–	Ground
3	LMUT	O	Lch “L” detection flog
4	RMUT	O	Rch “L” detection flog
5	ACDT	O	Test output (Not used)
6	CKOUT	O	Master clock divider output (Not used)
7	SQCK	I	Clock input for SQSO read out
8	SQSO	O	Serial output for Sub-Q 80bit
9	SENS	O	SENS signal output to CPU
10	DATA	I	Serial data input, supplied from CPU
11	XLAT	I	Latch input, supplied from CPU
12	CLOK	I	Serial data transfer clock input, supplied from CPU
13	SEIN	I	SENS input from IC101
14	CNIN	I	Numbers of track jump counted signal input
15	DATO	O	Serial data output to IC101
16	XLTO	O	Serial data latch output to IC101
17	CLKO	O	Serial data transfer clock output to IC101
18	SPOA	I	Micro computer demodulation interface (Input A)
19	SPOB	I	Micro computer demodulation interface (Input B)
20	SPOC	I	Micro computer demodulation interface (Input C)
21	SPOD	I	Micro computer demodulation interface (Input D)
22	XLON	O	Micro computer demodulation interface (Output)
23	FOK	I	Focus OK input
24	VDD	–	+5V power supply
25	VSS	–	Ground
26	MON	O	Output to control ON/OFF of spindle motor (Not used)
27	MDP	O	Output to control spindle motor servo
28	MDS	O	Output to control spindle motor servo (Not used)
29	LOCK	O	GFS is sampled by 460Hz
30	PWMI	I	Input to control the outside spindle motor
31	TES0	I	Test pin (Connected to ground)
32	TES1	I	Test pin (Connected to ground)
33	VPCO2	O	Charge-pump output (Not used)
34	VPCO1	O	Charge-pump output (Not used)
35	VCKI	I	VCO2 oscillator input (Not used)
36	V16M	O	VCO2 oscillator output (Not used)
37	VCTL	I	VCO2 control voltage input
38	PCO	O	Charge-pump output to master PLL
39	FILO	O	Filter output to master PLL
40	FILI	I	Filter input for master PLL

- Abbreviation
  GFS : Guarded Frame Sync
  PLL : Phase Locked Loop

Pin No.	Pin Name	I/O	Function
41	AVSS	–	Analog ground
42	CLTV	I	Control voltage input for VCO
43	AVDD	–	Analog power supply
44	RF	I	EFM signal input
45	BIAS	I	Asymmetry circuit constant current input
46	ASYI	I	Asymmetry comparate voltage input
47	ASYO	O	EFM full swing output ("L" =VSS, "H" =VDD)
48	ASYE	I	Asymmetry circuit ON/OFF ("L"=OFF, "H"=ON)
49	WDCK	O	D/A interface Word clock f=2fs
50	LRCK	O	D/A interface LR clock output f=Fs
51	LRCKI	I	D/A interface LR clock input f=Fs
52	PCMD	O	D/A interface Serial data output
53	PCMDI	I	D/A interface Serial data input
54	BCK	O	D/A interface Bit clock output
55	BCKI	I	D/A interface Bit clock input
56	VSS	–	Ground
57	VDD	–	+5V power supply
58	GTOP	O	Not used
59	XUGF	O	Not used
60	XPLCK	O	EFM decoder PLL clock output
61	GFS	O	"H" Playback EFM sync and interpolation protection timming much
62	RFCK	O	Read frame clock signal output
63	C2PO	O	Not used
64	XRAOF	O	Internal RAM overflow detection signal output (Not used)
65	MNT3	O	Not used
66	MNT1	O	Not used
67	MNT0	O	Not used
68	XTSL	I	Not used
69	FSTT	O	2/3 divider output (Not used)
70	C4M	O	4.2336MHz output(Not used)
71	DOUT	O	Digital audio signal output
72	EMPH	O	Playback disc output in emphasis mode
73	EMPHI	I	"H" =Input when de-emphasis ON
74	WFCK	O	Write frame clock signal output
75	SCOR	O	Sub-code sync output
76	SBSO	O	Sub-P through Sub-W serial output
77	EXCK	I	Clock input for SBSO read-out
78	VSS	–	Ground
79	VDD	–	+5V power supply
80	SYSM	I	System mute input

- Abbreviation
  EFM : Eight to Fourteen Modulation

Pin No.	Pin Name	I/O	Function
81	—	–	Not used
82	AVSS	–	Analog ground
83	AVDD	–	Analog power supply
84	AOUT1	O	Lch analog output
85	AIN1	I	Lch opamp input
86	LOUT1	O	Lch line output
87	AVSS	–	Analog ground
88	XVDD	–	Master clock power supply
89	XTAI	I	X'tal oscillator circuit input
90	XTAO	O	X'tal oscillator circuit output
91	XVSS	–	Master clock ground
92	AVSS	–	Analog ground
93	LOUT2	O	Rch line output
94	AIN2	I	Rch opamp input
95	AOUT2	O	Rch analog output
96	AVDD	–	Analog power supply
97	AVSS	–	Analog ground
98	—	–	Not used
99	—	–	Not used
100	XRST	I	System reset input

• **IC501 SYSTEM CONTROL (CXP82616-034Q)**

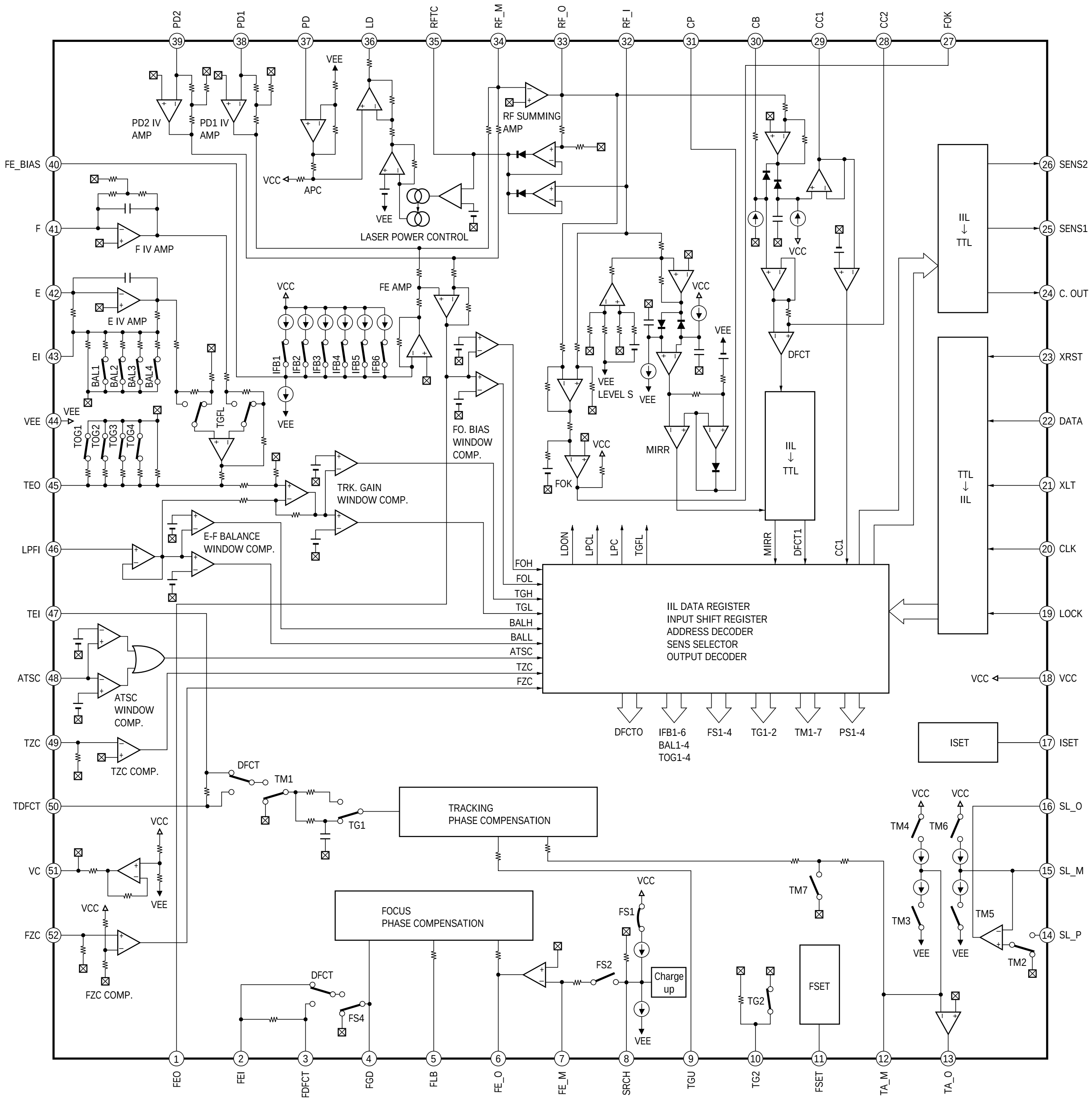
Pin No.	Pin Name	I/O	Function
1	GND	–	Ground
2	RMIN	I	Remote control signal input
3	GND	–	Ground
4 to 7	—	–	Not used
8	CLK	O	Serial clock output
9	SENSE	I	Sense signal input from IC103 (CXD2529Q)
10	DATA	O	Serial data output
11	SQCK	O	Sub Q clock output
12	SQSO	I	Sub Q data input
13	SENSE2	I	Sense signal input from IC101 (CXA1992AR)
14	—	–	Not used (Open)
15	XLAT	O	Serial latch output
16 to 19	$\overline{\text{MUTE}}$	O	Muting control signal output
20	LD OUT	O	Loading motor control
21	LD IN	O	Loading motor control
22, 23	—	–	Not used (Open)
24 to 26	KEY 0 to KEY 2	I	Key input 0 to 2
27	—	–	Not used (Open)
28	ADJ/AFADJ	I	Test mode terminal
29	IN/OUT SW	I	CD tray IN/OUT switch
30	RST	I	System reset terminal
31	EXTAL	O	System oscillator (4.0 MHz)
32	XTAL	I	System oscillator (4.0 MHz)
33	VSS	–	Ground
34 to 41	OPEN	–	Not used (Open)
42 to 62	S21 to S1	O	FL segment signal output
63 to 67	1G to 5G	O	FL grid signal output
68	—	–	Not used (Open)
69, 70	6G, 7G	O	FL grid signal output
71	VFDP (–30V)	–	Pull down voltage (–30V)
72	VDD (+5V)	–	Power supply (+5V)
73, 74	GND	–	Ground
75	VDD	–	Power supply (+5V)
76, 77	—	–	Not used (Open)
78	SCOR	I	Sub code data request signal input
79, 80	GND	–	Ground

• Abbreviation
FL : Fluorescent indicator tube

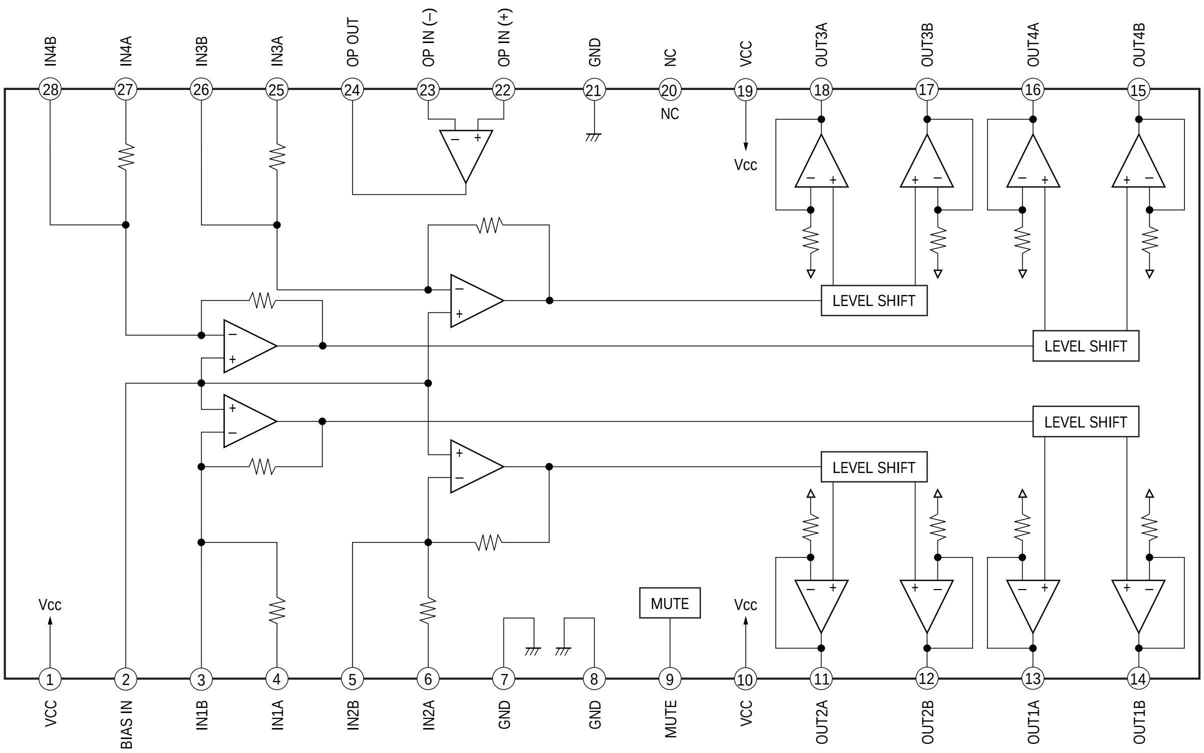
6-9. IC BLOCK DIAGRAMS

• CD section

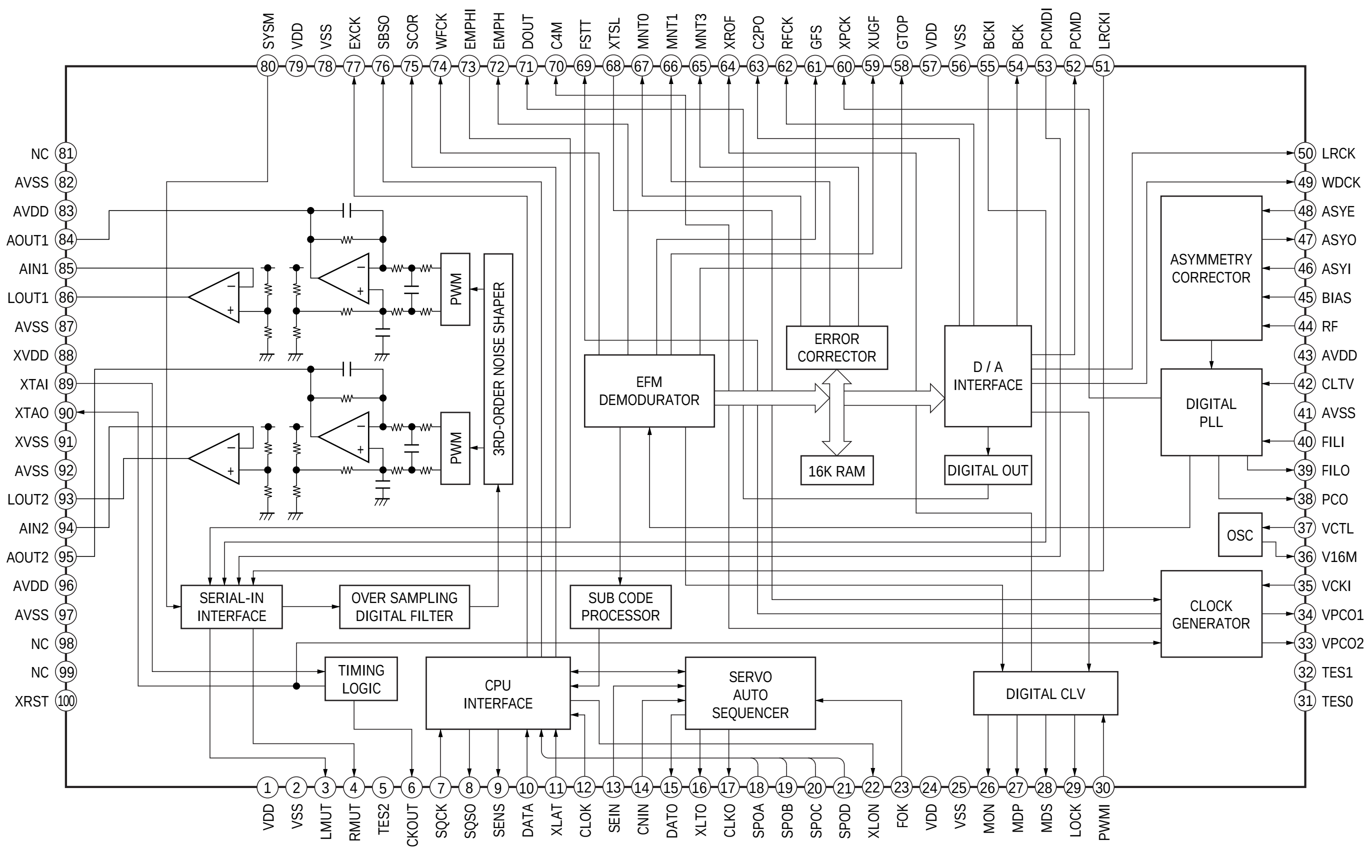
IC101 CXA1992AR



IC102 BA5941FP

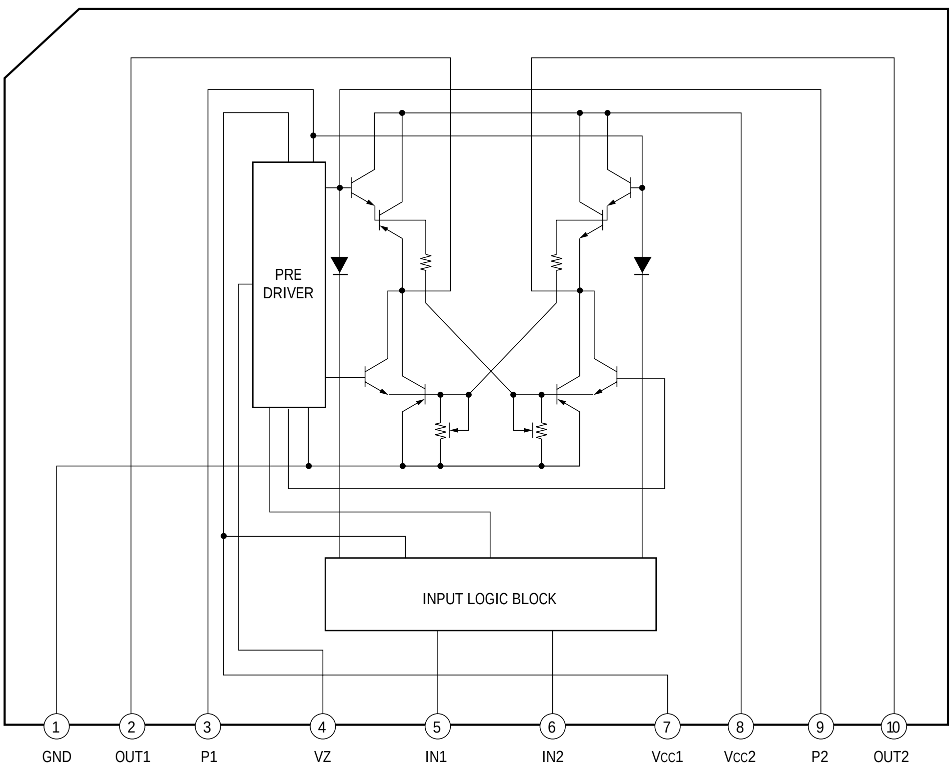


IC103 CXD2529Q

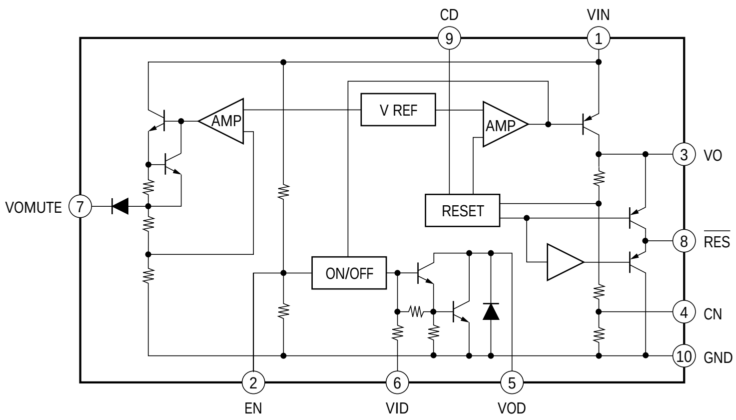


• MAIN section

IC401 LB1641



IC701 LA5601



Ver 1.1 2001.05

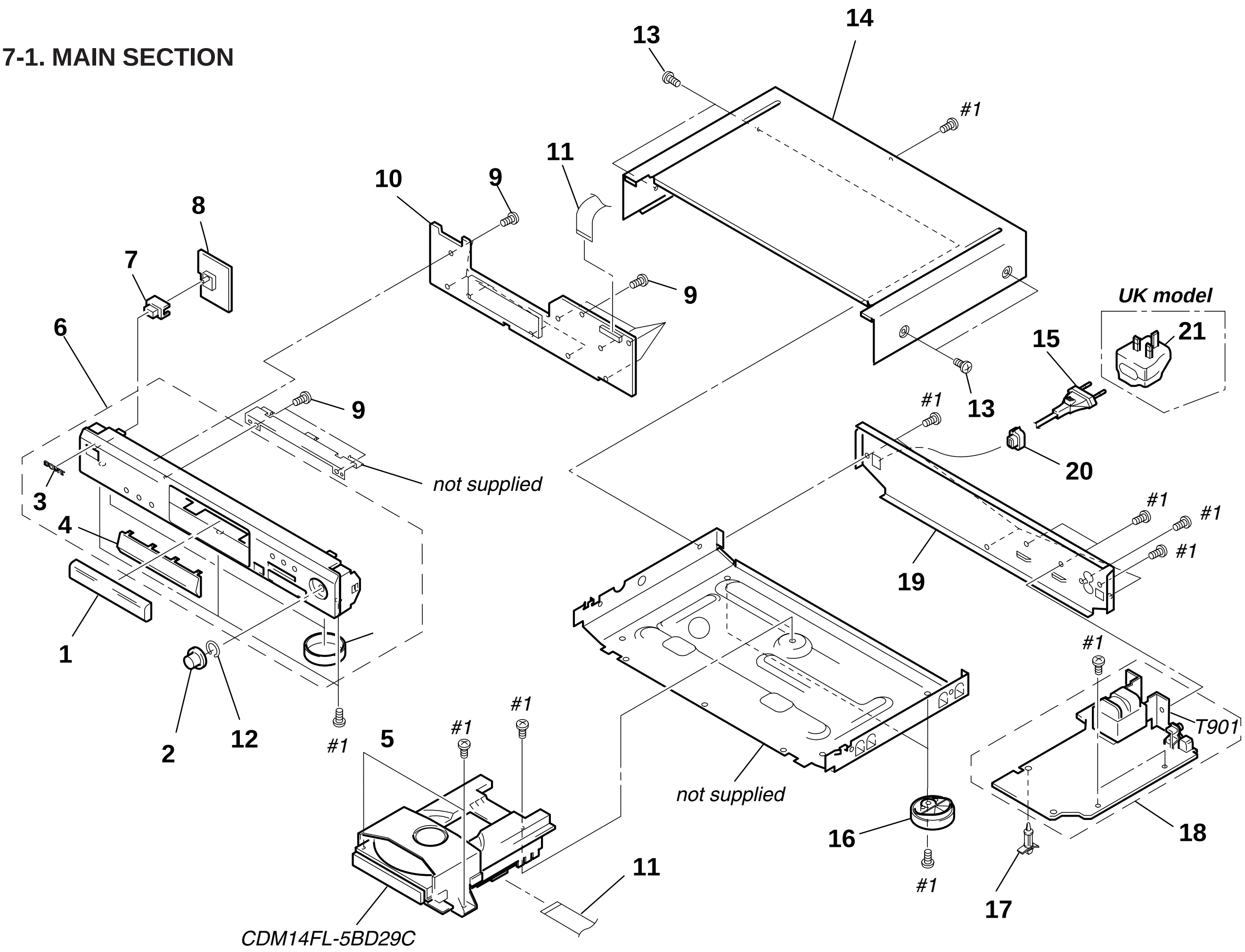
SECTION 7
EXPLODED VIEWS

NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

- Color indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ••• (RED)
  ↑ Parts color ↑ Cabinet's color

> The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
> Replace only with part number specified.

7-1. MAIN SECTION

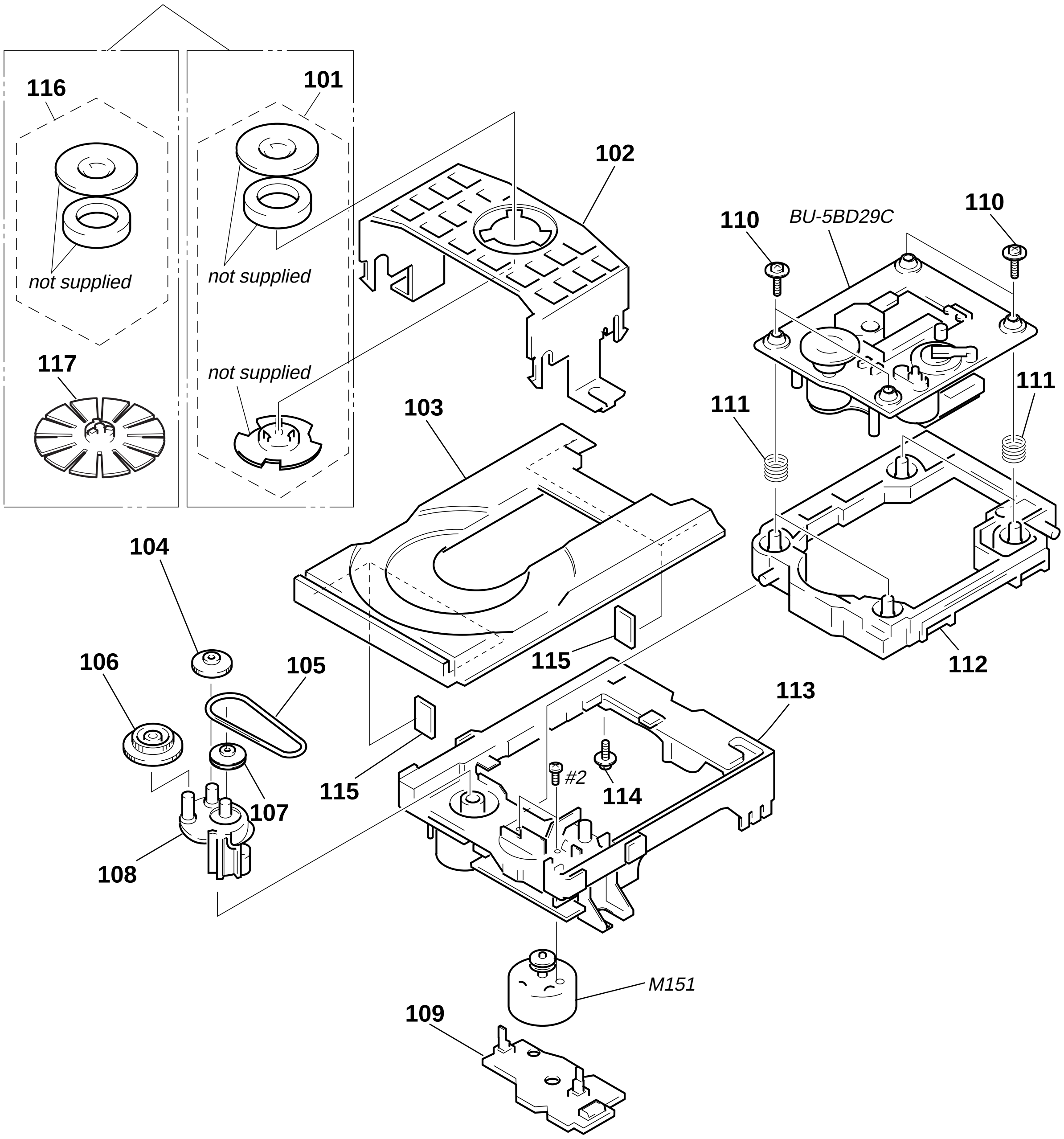


Ref. No.	Part No.	Description	Remark
1	4-996-562-01	PANEL, LOADING…(BLACK)	
1	4-996-562-51	PANEL, LOADING…(SILVER) (XE220)	
2	4-996-687-21	KNOB (AMS)	
3	4-996-698-21	EMBLEM, SONY	
4	4-996-560-01	WINDOW (FL)	
5	4-977-593-01	RING (DIA. 50), ORNAMENTAL	
6	X-4949-358-1	PANEL ASSY, FRONT…(BLACK) (XE220)	
6	X-4949-424-1	PANEL ASSY, FRONT (XE320)	
6	X-4952-810-2	PANEL ASSY, FRONT…(SILVER) (XE220)	
7	4-977-589-71	BUTTON (POWER)	
* 8	1-668-618-11	POWER SW BOARD	
9	4-951-620-01	SCREW (2.6X8), +BVTP	
* 10	A-4699-942-A	PANEL BOARD, COMPLETE	
11	1-590-243-11	WIRE (FLAT TYPE) (21 CORE)	
12	3-354-981-01	SPRING (SUS), RING	
13	3-710-901-11	SCREW, TAPPING…(BLACK)	

Ref. No.	Part No.	Description	Remark
13	4-210-291-11	SCREW, TAPPING…(SILVER) (XE220)	
* 14	4-978-901-21	CASE (408226)…(BLACK)	
* 14	4-980-193-41	CASE (408226)…(SILVER) (XE220)	
⚠15	1-575-651-21	CORD, POWER	
16	X-4947-207-1	FOOT ASSY (F50150S)	
* 17	4-954-051-51	HOLDER, PC BOARD	
* 18	A-4699-941-A	MAIN BOARD, COMPLETE	
* 19	4-996-565-01	PANEL, BACK (XE320:AEP)	
* 19	4-996-565-11	PANEL, BACK (XE320:UK)	
* 19	4-996-565-21	PANEL, BACK…(BLACK) (XE220:AEP)	
* 19	4-996-565-31	PANEL, BACK…(BLACK) (XE220:UK)	
* 19	4-996-565-41	PANEL, BACK…(SILVER) (XE220)	
20	4-966-267-11	BUSHING (FBS001), CORD	
⚠21	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)	
⚠T901	1-423-979-11	TRANSFORMER, POWER	

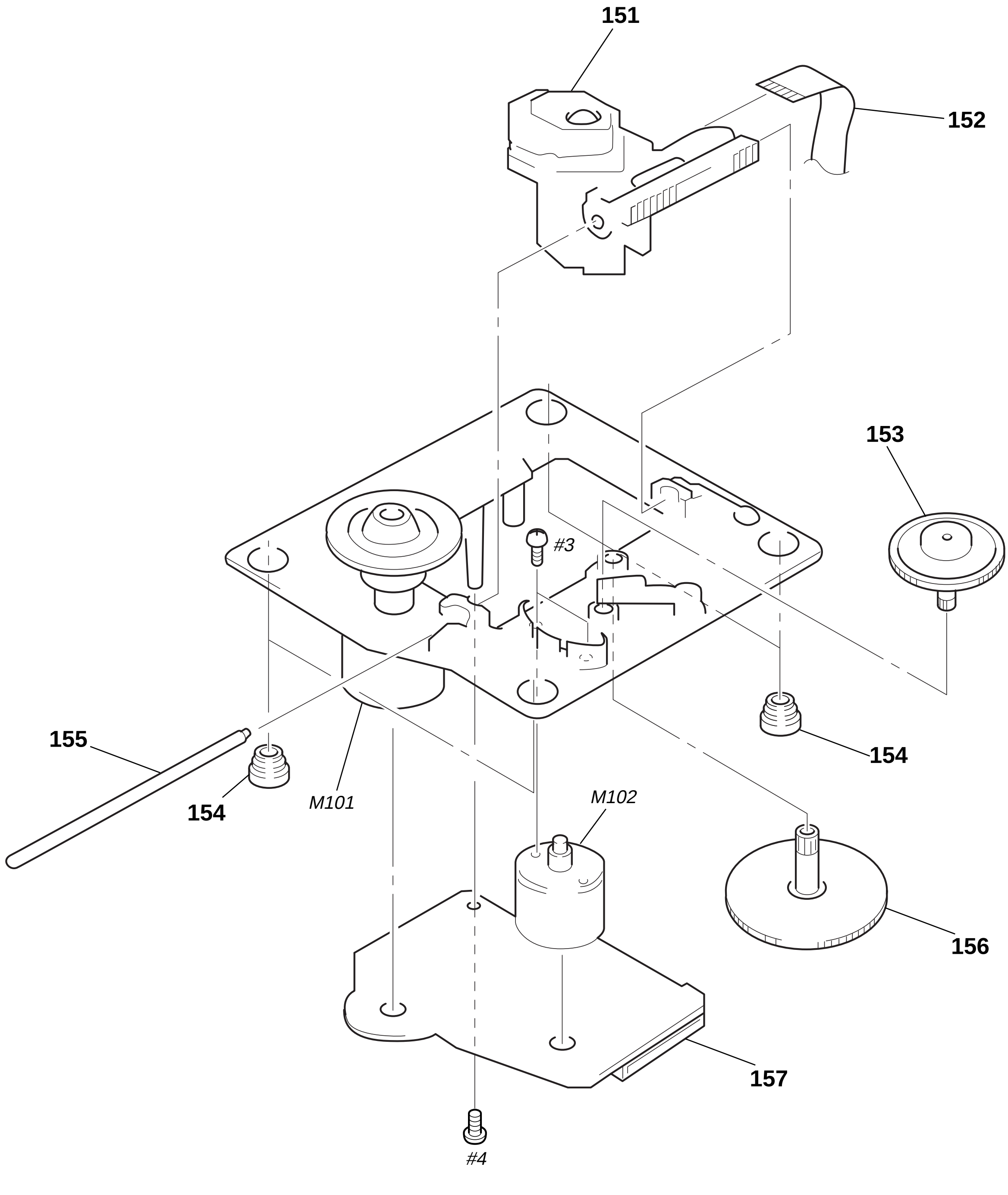
7-2. CD MECHANISM SECTION (CDM14FL-5BD29C)

NOTE: There are two types of MAGNET ASSY.
Confirm the shape before replacing the parts.



	Ref. No.	Part No.	Description	Remark
*	101	1-452-538-11	MAGNET	
	102	4-933-110-41	HOLDER (MG)	
	103	4-995-814-01	TABLE (FL), DISC	
	104	4-967-268-01	GEAR (C)	
	105	4-927-649-01	BELT	
	106	4-933-107-01	GEAR (PL)	
	107	4-927-651-01	PULLEY (S)	
	108	4-933-109-01	CAM	
*	109	1-645-721-11	LOADING BOARD	
	110	4-933-134-01	SCREW +PTPWH M2.6X6	
	111	4-959-996-01	SPRING (932), COMPRESSION	
	112	4-933-129-01	HOLDER (BU)	
	113	4-933-111-11	CHASSIS (MD)	
*	114	4-917-583-21	BRACKET, YOKE	
	115	4-925-315-31	DAMPER	
	116	1-452-925-21	MAGNET ASSY	
	117	4-993-142-11	PULLY (L), PRESS	
	M151	A-4672-207-A	MOTOR (L) ASSY (LOADING)	

7-3. BASE UNIT SECTION (BU-5BD29C)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
⚠151	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
153	4-917-567-21	GEAR (M)	
154	4-951-940-01	INSULATOR (BU)	
155	4-917-565-01	SHAFT, SLED	
156	4-917-564-01	GEAR (P), FLATNESS	
* 157	A-4699-944-A	BD BOARD, COMPLETE	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	

SECTION 8
ELECTRICAL PARTS LIST

BD

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

Ref. No.	Part No.	Description			Remark
*	A-4699-944-A	BD BOARD, COMPLETE			
		******************			
		< CAPACITOR >			
C101	1-126-607-11	ELECT CHIP	47uF	20%	4V
C102	1-163-141-00	CERAMIC CHIP	0.001uF	5%	50V
C103	1-164-346-11	CERAMIC CHIP	1uF		16V
C105	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C106	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C107	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C108	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C109	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C110	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C111	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C112	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C113	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C114	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C115	1-126-607-11	ELECT CHIP	47uF	20%	4V
C116	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C117	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C118	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C119	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C120	1-124-779-00	ELECT CHIP	10uF	20%	16V
C121	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C122	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C123	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C124	1-126-607-11	ELECT CHIP	47uF	20%	4V
C125	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C126	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C127	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C128	1-163-135-00	CERAMIC CHIP	560PF	5%	50V
C129	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C130	1-164-336-11	CERAMIC CHIP	0.33uF		25V
C131	1-164-346-11	CERAMIC CHIP	1uF		16V
C140	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C154	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C161	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C162	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C163	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C164	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V
C165	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C166	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C167	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C168	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C169	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C170	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C171	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C173	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C174	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C175	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C176	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C177	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C178	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C179	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C181	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C182	1-126-395-11	ELECT CHIP	22uF	20%	16V
C183	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C185	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C188	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C189	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
		< CONNECTOR >			
CNU101	1-770-014-11	CONNECTOR, FFC/FPC 16P			
CNU102	1-784-360-11	CONNECTOR, FFC (LIF (NON-ZIF)) 21P			
		< INDUCTOR >			
FB101	1-414-234-11	INDUCTOR CHIP 0UH			
FB103	1-414-234-11	INDUCTOR CHIP 0UH			
		< IC >			
IC101	8-752-080-62	IC CXA1992AR			
IC102	8-759-429-32	IC BA5941FP-E2			
IC103	8-752-380-64	IC CXD2529Q			
		< JUMPER RESISTOR >			
JW101	1-216-295-91	SHORT	0		
JW104	1-216-295-91	SHORT	0		
		< MOTOR >			
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)			
M102	X-4917-504-1	MOTOR ASSY (SLED)			
		< TRANSISTOR >			
Q101	8-729-010-08	TRANSISTOR MSB710-R			
		< RESISTOR >			
R102	1-216-001-00	METAL CHIP	10	5%	1/10W
R104	1-216-093-00	METAL CHIP	68K	5%	1/10W
R105	1-216-088-00	METAL CHIP	43K	5%	1/10W
R106	1-216-088-00	METAL CHIP	43K	5%	1/10W
R107	1-216-088-00	METAL CHIP	43K	5%	1/10W
R108	1-216-088-00	METAL CHIP	43K	5%	1/10W
R109	1-216-093-00	METAL CHIP	68K	5%	1/10W
R114	1-216-101-00	METAL CHIP	150K	5%	1/10W
R115	1-216-101-00	METAL CHIP	150K	5%	1/10W
R116	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R117	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R118	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R119	1-216-085-00	METAL CHIP	33K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R120	1-216-089-91	RES, CHIP	47K	5%	1/10W
R121	1-216-114-00	RES, CHIP	510K	5%	1/10W
R122	1-216-097-91	RES, CHIP	100K	5%	1/10W
R123	1-216-099-00	METAL CHIP	120K	5%	1/10W
R124	1-216-091-00	METAL CHIP	56K	5%	1/10W
R125	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R126	1-216-063-91	RES, CHIP	3.9K	5%	1/10W
R127	1-216-089-91	RES, CHIP	47K	5%	1/10W
R128	1-216-098-00	METAL CHIP	110K	5%	1/10W
R129	1-216-049-91	RES, CHIP	1K	5%	1/10W
R130	1-216-079-00	METAL CHIP	18K	5%	1/10W
R131	1-216-079-00	METAL CHIP	18K	5%	1/10W
R132	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R133	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R134	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R135	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R136	1-216-073-00	METAL CHIP	10K	5%	1/10W
R137	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R138	1-216-025-91	RES, CHIP	100	5%	1/10W
R156	1-216-081-00	METAL CHIP	22K	5%	1/10W
R157	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R158	1-216-001-00	METAL CHIP	10	5%	1/10W
R159	1-216-121-91	RES, CHIP	1M	5%	1/10W
R161	1-216-097-91	RES, CHIP	100K	5%	1/10W
R162	1-216-073-00	METAL CHIP	10K	5%	1/10W
R163	1-216-121-91	RES, CHIP	1M	5%	1/10W
R164	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R165	1-216-049-91	RES, CHIP	1K	5%	1/10W
R166	1-216-073-00	METAL CHIP	10K	5%	1/10W
R167	1-216-081-00	METAL CHIP	22K	5%	1/10W
R168	1-216-073-00	METAL CHIP	10K	5%	1/10W
R169	1-216-079-00	METAL CHIP	18K	5%	1/10W
R170	1-216-081-00	METAL CHIP	22K	5%	1/10W
R171	1-216-073-00	METAL CHIP	10K	5%	1/10W
R172	1-216-079-00	METAL CHIP	18K	5%	1/10W
R173	1-216-049-91	RES, CHIP	1K	5%	1/10W
R174	1-216-033-00	METAL CHIP	220	5%	1/10W
R175	1-216-025-91	RES, CHIP	100	5%	1/10W
R176	1-216-049-91	RES, CHIP	1K	5%	1/10W
R177	1-216-049-91	RES, CHIP	1K	5%	1/10W
R178	1-216-049-91	RES, CHIP	1K	5%	1/10W
R179	1-216-025-91	RES, CHIP	100	5%	1/10W
R180	1-216-025-91	RES, CHIP	100	5%	1/10W
R181	1-216-025-91	RES, CHIP	100	5%	1/10W
R182	1-216-025-91	RES, CHIP	100	5%	1/10W
R183	1-216-025-91	RES, CHIP	100	5%	1/10W
R188	1-216-037-00	METAL CHIP	330	5%	1/10W
R189	1-216-025-91	RES, CHIP	100	5%	1/10W
R190	1-216-097-91	RES, CHIP	100K	5%	1/10W
R191	1-216-105-91	RES, CHIP	220K	5%	1/10W
		< SWITCH >			
S101	1-572-085-11	SWITCH, LEAF (LIMIT)			
		< VIBRATOR >			
X101	1-767-408-21	VIBRATOR, CRYSTAL (16.9344MHz)			

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Ref. No.	Part No.	Description			Remark
*	1-645-721-11	LOADING BOARD **************			
		< CONNECTOR >			
* CN151	1-568-943-11	PIN, CONNECTOR 5P			
		< SWITCH >			
S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)			
S152	1-572-086-11	SWITCH, LEAF (LOAD IN)			

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Ref. No.	Part No.	Description			Remark
*	A-4699-941-A	MAIN BOARD, COMPLETE *********************			
		< CAPACITOR >			
C301	1-162-286-21	CERAMIC	220PF	10%	50V
C302	1-130-479-00	MYLAR	0.0047uF	5%	50V
C303	1-126-967-11	ELECT	47uF	20%	16V
C304	1-162-286-21	CERAMIC	220PF	10%	50V
C305	1-130-472-00	MYLAR	0.0012uF	5%	50V
C306	1-161-494-00	CERAMIC	0.022uF		25V
C307	1-162-290-31	CERAMIC	470PF	10%	50V
C308	1-104-666-11	ELECT	220uF	20%	25V
C309	1-161-494-00	CERAMIC	0.022uF		25V
C310	1-164-159-21	CERAMIC	0.1uF		50V
C351	1-162-286-21	CERAMIC	220PF	10%	50V
C352	1-130-479-00	MYLAR	0.0047uF	5%	50V
C353	1-126-967-11	ELECT	47uF	20%	16V
C354	1-162-286-21	CERAMIC	220PF	10%	50V
C355	1-130-472-00	MYLAR	0.0012uF	5%	50V
C356	1-161-494-00	CERAMIC	0.022uF		25V
C357	1-162-290-31	CERAMIC	470PF	10%	50V
C401	1-161-494-00	CERAMIC	0.022uF		25V
C402	1-162-306-11	CERAMIC	0.01uF	20%	16V
C403	1-126-964-11	ELECT	10uF	20%	50V
C702	1-126-964-11	ELECT	10uF	20%	50V
C703	1-162-294-31	CERAMIC	0.001uF	10%	50V
C704	1-104-666-11	ELECT	220uF	20%	25V
C705	1-126-964-11	ELECT	10uF	20%	50V
C706	1-126-933-11	ELECT	100uF	20%	16V
C707	1-126-960-11	ELECT	1uF	20%	50V
C708	1-126-964-11	ELECT	10uF	20%	50V
C709	1-126-964-11	ELECT	10uF	20%	50V
C710	1-126-964-11	ELECT	10uF	20%	50V
C711	1-126-956-91	ELECT	0.1uF	20%	50V
C713	1-164-159-21	CERAMIC	0.1uF		50V
C714	1-164-159-21	CERAMIC	0.1uF		50V
C715	1-126-933-11	ELECT	100uF	20%	16V
C716	1-162-290-31	CERAMIC	470PF	10%	50V
C717	1-162-290-31	CERAMIC	470PF	10%	50V
C718	1-164-159-21	CERAMIC	0.1uF		50V
C719	1-164-159-21	CERAMIC	0.1uF		50V
C901	1-126-939-11	ELECT	10000uF	20%	16V
C902	1-126-768-11	ELECT	2200uF	20%	16V
C903	1-128-576-11	ELECT	100uF	20%	63V
C904	1-164-159-21	CERAMIC	0.1uF		50V

Ref. No.	Part No.	Description			Remark	
C905	1-161-494-00	CERAMIC	0.022uF		25V	
		< CONNECTOR >				
CN401	1-750-426-11	CONNECTOR, FFC/FPC 21P				
CN402	1-750-426-11	CONNECTOR, FFC/FPC 21P				
CN601	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P				
		< DIODE >				
D401	8-719-991-33	DIODE 1SS133T-77				
D402	8-719-109-97	DIODE RD6.8ES-B2				
D403	8-719-921-40	DIODE MTZJ-4.7C				
D404	8-719-982-19	DIODE MTZJ-30A				
D701	8-719-991-33	DIODE 1SS133T-77				
D702	8-719-991-33	DIODE 1SS133T-77				
D703	8-719-991-33	DIODE 1SS133T-77				
D704	8-719-991-33	DIODE 1SS133T-77				
D705	8-719-991-33	DIODE 1SS133T-77				
D706	8-719-991-33	DIODE 1SS133T-77				
D901	8-719-200-82	DIODE 11ES2				
D902	8-719-200-82	DIODE 11ES2				
D903	8-719-200-82	DIODE 11ES2				
D904	8-719-200-82	DIODE 11ES2				
D905	8-719-200-82	DIODE 11ES2				
		< IC >				
IC301	8-759-634-51	IC M5218AP				
IC302	8-759-634-51	IC M5218AP				
IC303	8-749-921-12	IC GP1F32T (DIGITAL OUT OPTICAL)				
IC401	8-759-822-09	IC LB1641				
IC701	8-759-821-93	IC LA5601				
		< JACK >				
J401	1-770-719-11	JACK, PIN 2P (LINE OUT)				
		< COIL >				
L701	1-414-223-11	INDUCTOR 470uH				
L703	1-410-507-11	INDUCTOR 6.8uH				
L704	1-410-322-11	INDUCTOR 3.3uH				
		< TRANSISTOR >				
Q302	8-729-922-37	TRANSISTOR 2SD2144S-UVW				
Q303	8-729-922-37	TRANSISTOR 2SD2144S-UVW				
Q304	8-729-029-56	TRANSISTOR DTA144ESA				
Q352	8-729-922-37	TRANSISTOR 2SD2144S-UVW				
Q353	8-729-922-37	TRANSISTOR 2SD2144S-UVW				
Q354	8-729-029-56	TRANSISTOR DTA144ESA				
Q401	8-729-041-38	TRANSISTOR 2SB1241TV2Q				
Q402	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q701	8-729-029-56	TRANSISTOR DTA144ESA				
		< RESISTOR >				
R301	1-247-848-11	CARBON	5.1K	5%	1/4W	
R302	1-249-429-11	CARBON	10K	5%	1/4W	
R303	1-249-432-11	CARBON	18K	5%	1/4W	
R304	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R305	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R307	1-249-432-11	CARBON	18K	5%	1/4W	
R308	1-247-891-00	CARBON	330K	5%	1/4W	
R310	1-247-807-31	CARBON	100	5%	1/4W	
R311	1-249-429-11	CARBON	10K	5%	1/4W	
R312	1-249-429-11	CARBON	10K	5%	1/4W	
R313	1-249-413-11	CARBON	470	5%	1/4W	F
R314	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R315	1-249-413-11	CARBON	470	5%	1/4W	F
R316	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R318	1-249-441-11	CARBON	100K	5%	1/4W	
R320	1-247-807-31	CARBON	100	5%	1/4W	
R351	1-247-848-11	CARBON	5.1K	5%	1/4W	
R352	1-249-429-11	CARBON	10K	5%	1/4W	
R353	1-249-432-11	CARBON	18K	5%	1/4W	
R354	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R355	1-249-420-11	CARBON	1.8K	5%	1/4W	F
R357	1-249-432-11	CARBON	18K	5%	1/4W	
R358	1-247-891-00	CARBON	330K	5%	1/4W	
R360	1-247-807-31	CARBON	100	5%	1/4W	
R361	1-249-429-11	CARBON	10K	5%	1/4W	
R362	1-249-429-11	CARBON	10K	5%	1/4W	
R363	1-249-413-11	CARBON	470	5%	1/4W	F
R364	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R365	1-249-413-11	CARBON	470	5%	1/4W	F
R366	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R368	1-249-441-11	CARBON	100K	5%	1/4W	
R370	1-247-807-31	CARBON	100	5%	1/4W	
R401	1-249-432-11	CARBON	18K	5%	1/4W	
R402	1-249-441-11	CARBON	100K	5%	1/4W	
R403	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R404	1-249-441-11	CARBON	100K	5%	1/4W	
R405	1-249-432-11	CARBON	18K	5%	1/4W	
R406	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R407	1-249-432-11	CARBON	18K	5%	1/4W	
R408	1-249-427-11	CARBON	6.8K	5%	1/4W	F
R701	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R702	1-249-441-11	CARBON	100K	5%	1/4W	
R704	1-247-807-31	CARBON	100	5%	1/4W	
R705	1-249-417-11	CARBON	1K	5%	1/4W	F
R706	1-247-807-31	CARBON	100	5%	1/4W	
R707	1-247-807-31	CARBON	100	5%	1/4W	
R708	1-247-807-31	CARBON	100	5%	1/4W	
R709	1-247-807-31	CARBON	100	5%	1/4W	
		< TRANSFORMER >				
⚠T901	1-423-979-11	TRANSFORMER, POWER				

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Ref. No.	Part No.	Description			Remark
*	A-4699-942-A	PANEL BOARD, COMPLETE			
		**********************			
		< CAPACITOR >			
C501	1-161-494-00	CERAMIC	0.022uF		25V
C502	1-161-494-00	CERAMIC	0.022uF		25V
C503	1-164-159-21	CERAMIC	0.1uF		50V
C504	1-164-159-21	CERAMIC	0.1uF		50V
C506	1-124-584-00	ELECT	100uF	20%	10V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

PANEL

POWER SW

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN501	1-568-864-11	SOCKET, CONNECTOR 21P	
		< FLUORESCENT INDICATOR >	
FL501	1-517-297-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC501	8-752-880-56	IC CXP82616-034Q	
IC502	8-749-014-66	IC NJL56H400	
		< TRANSISTOR >	
Q501	8-729-029-66	TRANSISTOR DTC114ESA	
		< RESISTOR >	
R501	1-249-427-11	CARBON 6.8K 5%	1/4W F
R502	1-249-427-11	CARBON 6.8K 5%	1/4W F
R503	1-249-427-11	CARBON 6.8K 5%	1/4W F
R504	1-249-415-11	CARBON 680 5%	1/4W F
R505	1-249-417-11	CARBON 1K 5%	1/4W F
R506	1-249-417-11	CARBON 1K 5%	1/4W F
R507	1-249-419-11	CARBON 1.5K 5%	1/4W F
R508	1-249-421-11	CARBON 2.2K 5%	1/4W F
R509	1-249-427-11	CARBON 6.8K 5%	1/4W F
R510	1-249-415-11	CARBON 680 5%	1/4W F
R511	1-249-417-11	CARBON 1K 5%	1/4W F
R512	1-249-419-11	CARBON 1.5K 5%	1/4W F
R513	1-249-427-11	CARBON 6.8K 5%	1/4W F
R514	1-249-415-11	CARBON 680 5%	1/4W F
R515	1-247-807-31	CARBON 100 5%	1/4W
R516	1-249-441-11	CARBON 100K 5%	1/4W
R517	1-247-843-11	CARBON 3.3K 5%	1/4W
R518	1-249-427-11	CARBON 6.8K 5%	1/4W F
R519	1-249-431-11	CARBON 15K 5%	1/4W
R520	1-247-807-31	CARBON 100 5%	1/4W
		< SWITCH >	
S502	1-554-303-21	SWITCH, TACTILE (TIME)	
S503	1-554-303-21	SWITCH, TACTILE (REPEAT)	
S504	1-554-303-21	SWITCH, TACTILE (PLAY MODE)	
S508	1-554-303-21	SWITCH, TACTILE (PEAK SEARCH)	
S509	1-554-303-21	SWITCH, TACTILE (CHECK)	
S510	1-554-303-21	SWITCH, TACTILE (CLEAR)	
S511	1-554-303-21	SWITCH, TACTILE (⏏ OPEN/CLOSE)	
S512	1-554-303-21	SWITCH, TACTILE (▷)	
S513	1-554-303-21	SWITCH, TACTILE (❚❚)	
S514	1-554-303-21	SWITCH, TACTILE (■)	
S515	1-554-303-21	SWITCH, TACTILE (▶▶)	
S516	1-554-303-21	SWITCH, TACTILE (◀◀)	
S520	1-475-543-11	ENCODER, ROTARY (I◁◁ AMS ▷▷I)	
		< VIBRATOR >	
X501	1-577-082-11	VIBRATOR, CERAMIC (4MHz)	

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Ref. No.	Part No.	Description	Remark
*	1-668-618-11	POWER SW BOARD	
		****************	
		< SWITCH >	
S501	1-554-118-00	SWITCH, PUSH (1 KEY)(I/⏻)	

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Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		*************	
11	1-590-243-11	WIRE (FLAT TYPE) (21 CORE)	
⚠15	1-575-651-21	CORD, POWER	
⚠21	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)	
* 101	1-452-538-11	MAGNET	
116	1-452-925-21	MAGNET ASSY	
⚠151	8-848-379-31	OPTICAL PICK-UP KSS-213BA/F-NP	
152	1-769-069-11	WIRE (FLAT TYPE)(16 CORE)	
M101	X-4917-523-4	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M151	A-4672-207-A	MOTOR (L) ASSY (LOADING)	
⚠T901	1-423-979-11	TRANSFORMER, POWER	

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ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-467-880-11	REMOTE COMMANDER (RM-D420)(XE320)	
	1-558-271-11	CORD, CONNECTION (AUDIO 108cm)	
	3-861-618-11	MANUAL, INSTRUCTION (ENGLISH,FRENCH,SPANISH)	
	3-861-618-21	MANUAL, INSTRUCTION (GERMAN,DUTCH,ITALIAN,PORTUGUESE)(AEP)	
	3-861-618-31	MANUAL, INSTRUCTION (SWEDISH,DANNISH,FINISH)(AEP)	
	3-861-618-41	MANUAL, INSTRUCTION (ENGLISH,POLISH,RUSSIAN)(AEP)	
	3-861-618-51	MANUAL, INSTRUCTION (HUNGARIAN)(AEP)	
	3-861-618-61	MANUAL, INSTRUCTION (CZECH)(AEP)	
	3-861-618-81	MANUAL, INSTRUCTION (GREEK)(AEP)	
	4-962-615-01	COVER, BATTERY (FOR RM-D420)(XE320)	

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****
HARDWARE LIST
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Ref. No.	Part No.	Description	Remark
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-621-775-10	SCREW +B 2.6X4	
#3	7-621-255-15	SCREW +P 2X3	
#4	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

– MEMO –

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.1	2001.05	Silver model added for CDP-XE220. (SFD-01006)
1.0	1998.04	New